USDA Forest Service
Aviation Safety Summary
June 2001

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Dear colleagues

Recent helicopter incidents have prompted discussion about what constitutes the difference between an "accident" and an "incident with potential" with helicopter main rotor blade strikes. After carefully reviewing at the Code of Federal Regulations (49 CFR Ch VII 830.2) and getting clarification from NTSB headquarters, a shift in how blade strikes are interpreted seems to have occurred. The following is now clear:

> Any in-flight main blade strike that results in damage that requires major repair or replacement of the blade will be classified as an aviation accident. There is not much wiggle room here. According to the NTSB, nearly all airborne blade strikes are considered accidents.
> Ground damage to rotor blades does not automatically qualify as an accident, but it may in certain circumstances.

What does this mean to us?

This is a subtle but significant change in how we in the Forest Service have interpreted blade strikes in the past, and it will undoubtedly raise some concerns in the field with our vendors and pilots. We can head off some of the frustration by sharing this information in advance.

The bottom line is that if we hit something with a main blade, in all likelihood, we have an accident and we will investigate it as such. Treat any blade strike as a potential accident and preserve the site and evidence until released by the NTSB or a designated representative.

Kind regards

Tony Kern
National Aviation Safety and Training Manager

Dear Fire and Aviation Colleagues

At the recent Fire Directors' meeting in Denver, Tom Harbour expressed concern about how we were planning to integrate the many new helicopter contracts safely into this year's operations. The safety council discussed this on a conference call and requested information on a video (VHS) that was developed for this very purpose in the mid-1990s. Here is the information I promised.

The videos area available through the NFES catalogue as "The Professional Helicopter Pilot Supporting Wildland Fire Suppression."

NFES 2002 ($2.34) Part One: 16 minutes. Introduces the unique circumstances of flying specialized fire missions for land management agencies.

NFES 2487 ($2.42) Part Two: 19 minutes. Discusses helicopter safety for the pilot and helitack crew; duties of the HECM such as load calc and manifestation procedures, outlines duties of air operations positions. Pilot responsibilities stressed are radio communications, fire size up, landing areas and safety decision factors, bucket work considerations, rappelling considerations, value of aerial reconnaissance, and fueling.

We believe that this resource should be utilized to the maximum extent possible in conjunction pilot inspection briefings and with any other ongoing efforts to safely integrate these new members of the team.

Thanks to Tom for raising the issue and to the Regional Safety Managers for their attention to this important awareness initiative.

Kind regards

Tony Kern
National Aviation Safety and Training Manager
208.387.5607

I ran across this as I was looking through some historic data. This is an excerpt from the Jensen Report (1996) for those who are familiar. Terry Cullen, Acting R-4 Regional Aviation Officer

Ten Characteristics of the Expert Aviator

1. Possesses a high level of skill and works constantly to improve it.

2. Is highly motivated to learn all there is to know about this flight domain

3. Has superior ability to focus (or compartmentalize) attention on the flying task at hand and the mental discipline to change his or her focus of attention when new information suggests that a change is necessary.

4. Has excellent situation awareness, through careful observation of the flight environment, including location of other aircraft, terrain, navigation features, ATC clearances, and weather phenomena.

5. Carefully establishes a baseline for normal instrument indications, aircraft sounds, vibrations and g-forces with respect to control action so that his/her threshold for slight variations is very small.

6. Is skeptical about “normal” aircraft functioning and is constantly making contingency plans for those circumstances when things might go wrong.

7. Possesses superior mental skill and capacity for problem diagnosis, risk assessment and problem resolution.

8. Has excellent communication skills and can readily adapt them to the audience and situation.

9. Knows his/her limitations, is motivated to avoid situations that might push his/her skill to those limits.

10. Has the willpower to overcome the pressures of people around him/her to push the limits of his/her skill.

SAFE ATTITUDE

AIRWARD NEWS

In Recognition of Professional Performance during a Hazardous Aviation Event or Significant Contribution to Aviation Mishap Prevention

June 2001

Michael and Steve's Interception Saves the Game

Glen Johnston (right) presenting Michael Lewis (left) with Airward

Following a routine flight in their contract Bell 407, vibrations were noted after touchdown, requiring an inspection by the mechanic. The inspection revealed significant damage to the tail rotor gearbox assembly at the attachment point with the tailboom. Michael Lewis, helicopter manager, captured the damage with a prompt SafeCom, notified the Forest Aviation Manager and dispatcher, and initiated procedures to correct the damage. After notification, Steve Tome, Regional HOS, recognized the significance of the defect, since that particular aircraft has had an airworthiness directive issued for tail rotor problems. Here comes the play of the game.

Believing this could be related to other aircraft, Steve and Michael removed the aircraft from service until a more thorough investigation could be made. They completed a report with photographs for review by the Washington office, which had received a report of similar problems with another aircraft recently. This resulted in Bell Helicopters issuing a safety alert for inspections of the Bell 407 tail rotor system. Their thorough follow-up of a "one time" incident may prevent a more serious failure for another crew in the future. Thanks for the play that saved the game Michael and Steve!

USFS SafeCom 01-86

Steve Tome

Here Comes Steve to Save the Day!

Jim Morrison (right) presenting Airward to Steve Woods (left)

Steve Woods, Great Western Aviation, used super-hero powers to discover the broken right rudder stop cable on a DC-3. This cable was found on top of the horizontal carry-thru structure during the Phase 3 inspection. The aircraft experienced high winds last spring when the aileron gust locks fell out, so the aileron system was inspected. The pilot reported this problem and stated that the other locks remained in place. The rudder stop cable may have been broken anytime because this part of the aircraft is only inspected during the Phase 3 which was last performed in October 1999. Steve's x-ray vision prevented a disaster from later occurring. Keep up the good work, Super Steve!

USFS SafeCom 01-23

Aviation Safety Offices
www.aviation.fs.fed.us - www.oas.gov

Risk Management in Action

Bridging the gap between safety and operations in fire and aviation.

Issue 1. March 2001

Heli-mopping: A dirty word

Heli-mopping is a controversial term that conjures up images of poor risk management and inappropriate use of high-cost assets. While no one sets out to "build dumb fireline," an honest appraisal of interagency operations might uncover a few occasions where helicopters were utilized in this manner. This issue of *Risk Management in Action* seeks to provide some common sense guidance and solid tools for effective management of valuable aviation resources. Let's cut to the heart of the matter.

Aviation exists to support the ground firefighter. But this support means more than rotors, retardant and wings – more than water, information, and troop transport. To fully support the ground effort, aviation must also include the critical judgment piece that comes from aviation managers and operators, be they agency personnel or contractors. Decisions for safe and effective use should only be made after careful consideration and weighing all risk factors.

Recently, a joint effort between helicopter operations specialists, safety managers and operational personnel identified several factors that should be considered prior to helicopter use. Let's begin with a simple definition.

Heli-mopping: Use of a helicopter for water or retardant application beyond an initial attack in recently burned areas where there is minimal danger of the fire escaping.

Examples of possible heli-mopping include:

1. Aerial application without ground support or supervision on the interior of a fire.
2. Aerial application on an incident lacking reasonable certainty that the application will aid suppression efforts or gain tactical advantage.
3. Aerial application to increase helicopter utilization to justify retention of the helicopter on the incident.
4. Social or political pressure to maintain appearance of suppression activity when no tactical advantage is gained.
5. Contractor pressure to be utilized for income production.

Inappropriate factors that may motivate heli-mopping include:

1. Lack of aviation risk assessment knowledge and procedure.
2. Political, social, and/or media pressures and perceptions.
3. Increased utilization for purposes of justification and retention of aviation assets.
4. Lack of other resources to conduct mop-up operations.
5. Perceived moral support to fire personnel.
6. Reduce length of assignment.

Legitimate reasons for use of helicopter application assets inside the black:

1. Difficult terrain access that pose significant risk to ground firefighters.
2. Other serious ground fire personnel safety issues (heat stress, unburned islands, falling snags, etc.) where failure to use aviation assets would put ground firefighters at risk.

Decision tools

Two tools that are effective in resisting external pressures are the *Two-Challenge Rule* and the *More Conservative Response Rule.* These tools were originally designed by human factors experts to help Airline Captains prevent disasters due to a single momentary lapse of judgment by otherwise excellent decision makers. In its simplest form it works like this:

When a decision maker is challenged twice on a proposed course of action, he defaults to the more conservative of the options available, unless extreme circumstances are present.

This is only a suggested decision-making tool, and of course, is dependent on the situation at hand. It does provide a very good defense against ego-related decisions and protects the decision maker from him/herself if they are not functioning at full capacity due to fatigue, distraction or other factors.

Factors to consider when making the "appropriate use" decision include mission, time of day, environmental hazards (visibility and ceiling), terrain, pilot duty limitations, and why the mission is necessary (initial attack, direct attack, indirect attack, fire suppression support, perceived pressures). Armed with good information and participatory management tools, we can make the call on the acceptability of the action. Whenever an unacceptable risk is attained, and cannot be mitigated to a lower level, the mission will not be performed.

Heli-mopping is a dirty word. Lets eliminate it from our vocabulary by eliminating it from our operations.

(Note: Thanks to the Helicopter Operations Specialists (HOS) Group
and Type I Incident Commander Joe Stutler for their inputs on this edition.)

Risk Management in Action

Bridging the gap between safety and operations in fire and aviation.

Issue 2. April 2001

Retardant use and abuse

Hot on the heels of our first controversial discussion on the hazards associated with helimopping, (*http://www.aviation.fs.fed.us/riskmgt/ed1_Helimopping.pdf*) we turn our attention this month to another hot topic, the appropriate use of aerial delivered fire retardant. Make no mistake; this is a complex question involving not only safety, but also economics, public perception, peer pressure, communications and the appropriate role of government oversight. In short, it's a perfect topic for a risk management discussion.

Let's begin by re-emphasizing the obvious point that aviation exists to support the ground firefighter. But *how and when* this support should be provided brings many differing opinions. Consider the following quotes on retardant use from current fire and aviation personnel.

"I watched the fire burn downhill though the rain of retardant and they just kept laying it on – it was a waste of time and money."

"The aviators don't always understand what we are trying to do. Sometimes we are just trying to slow the damn thing (fire) down a bit, so we can move some ground troops to deal with it."

"It wasn't doing much good but they had to do something with all the media attention on this fire . . . a classic example of public relations fire-fighting."

"I just put it where they tell me."

There is a classic psychological study about eleven men viewing an elephant from different close in perspectives. Although they are looking at the same animal, they see eleven completely different pictures. Until they get together and talk - *no one has an accurate picture of what they are looking at.* I suspect that it is much the same with the risks involved with fire retardant drops and effectiveness – no one truly sees the big picture until they have all the inputs. In reality, we seldom if ever get all the inputs. Communication is the key here. Let's begin by identifying some significant risks involved in airtanker operations against wildfire, one of the most challenging and demanding tasks in all of aviation.

Our airtanker pilots are some of the most dedicated pilots on earth. They fly under extreme conditions in vintage aircraft for less than half of what their colleagues in the major airlines make. These men and women are extremely mission oriented, and we need to keep this in mind before we make a request that will put them in harm's way. Everyone, including ground firefighters, ATGSs, lead planes/ASMs, and tanker pilots, must make hazard identification and risk assessments before anyone can make adequate risk control decisions. What processes do we currently use to insure this occurs on each and every fire?

Hazard Identification: What are the high-risk scenarios?

There is good news and bad news here. The good news is that the airtanker mishap rate has been coming down significantly over the past two years. The bad news is that fixed-wing airtankers still have the highest mishap rate in the fire environment by a large margin. An analysis of mishaps from 1976 to the present reveals one particularly high-risk scenario: high winds or low visibility coupled with rugged terrain. Here are a few examples taken from 1990 to the present:

Fatal mishap: Airtanker was in 60 degrees of bank turning towards the drop site. The bank suddenly increased to 90 degrees and the aircraft struck the ground. High winds and turbulence reported in the area.

Fatal mishap: Winds were gusting to 18 knots when the airtanker crew dropped water on a steep slope. The aircraft encountered dense smoke. One wing struck trees and the airplane hit the ground.

Fatal mishap: The crew extended flaps and landing gear to control airspeed while descending into the canyon. During the pull up, the airtanker collided with terrain.

Risk Controls: "Right tool" approach and aggressive air supervision

Operational risk decisions should be made methodically after assessing the risks and analyzing possible control measures. The interagency aviation triangle below reminds us that after careful consideration of safety and cost effectiveness, the right tool can be selected to perform the required task. Don't be hard-wired to call in the airtankers when the job might be accomplished in a safer and more cost effective fashion with other assets. Also, keep in mind that as conditions change, particularly with regard to winds and visibility, you may want to re-evaluate the current approach. If what we are doing is not effective in controlling the fire, we need to ask (ourselves and each other) – why are we accepting the increased risk of unnecessary aircraft and crew exposure and wasting tax dollars?

Perhaps the best decision making tool available for this purpose are the aviators themselves. Experienced ATGSs, leadplane/ASM pilots, and airtanker crews spend their careers making and evaluating the effectiveness of air delivered retardant. They are in the best position to know when and where it is safe and appropriate to use this tool. However, aviators are often hesitant to speak up and question the actions or decisions of other aviators, and this can seriously degrade any risk management effort that relies on multiple perspectives and inputs. As a rule of thumb, "if you see something, say something" and take care of any ruffled feathers after everyone is safely back on the ground.

Retardant is a superb tool when used appropriately. Consider the following example that was faxed in earlier this year from an operations coordinator in Florida.

We had already lost one occupied residence and two mobile homes upon the arrival of the air attack and leadplane (and tanker) . . . the fire was approaching another twenty or more homes. I did not think we were going to be able to stop the fire. The pilots, in essence, had to thread the needle between the fire and endangered homes. They completed this with the utmost of professionalism and made the drop in the exact location . . . stopping the fire and saved in excess of twenty homes."

A tip of the hat to the professionalism of our airtanker and air supervision fleet. They are an irreplaceable asset to our operations. Let's keep them safe through effective utilization and sound risk management.

Risk Management 101

Risk management doesn't get in the way of doing the mission – it is the way we do the mission.

Step 1. Identify the hazards. Make this a mandatory step in your daily decision making routine.
Step 2. Assess the risk levels. Exposure time x probability of hazard occurrence = Risk
Step 3. Analyze control measures. Limiting exposure is almost always an option.
Step 4. Make control decisions. Make certain the right person with good information makes the tough calls.
Step 5. Implement risk controls. Deliberate actions designed to get the job done safely.
Step 6. Supervise and review. Stay on top of the situation, and adjust risk controls as necessary.

Briefing Paper
On
Helicopter Management Issues and Concerns

Background: The interagency community is considering significant changes in helicopter management policies in response to several challenges. This briefing paper is provided for information purposes to decision makers.

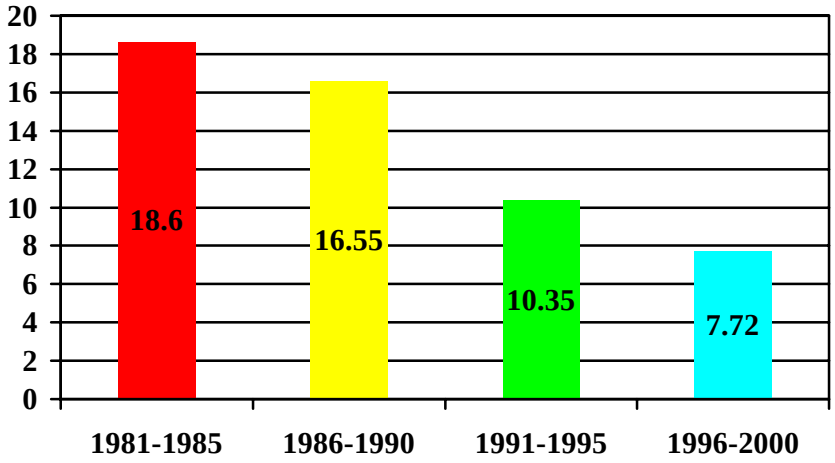
History: Helicopter Program Growth

- The use of helicopters for fire suppression began in California in 1947. In 1988, the year of the Yellowstone National Park fires, there were only 41 Type I and Type II Call When Needed (CWN) helicopters on contract. In 2001, that number has grown to 421, over a 1000% increase.

History: Helicopter Management and Safety

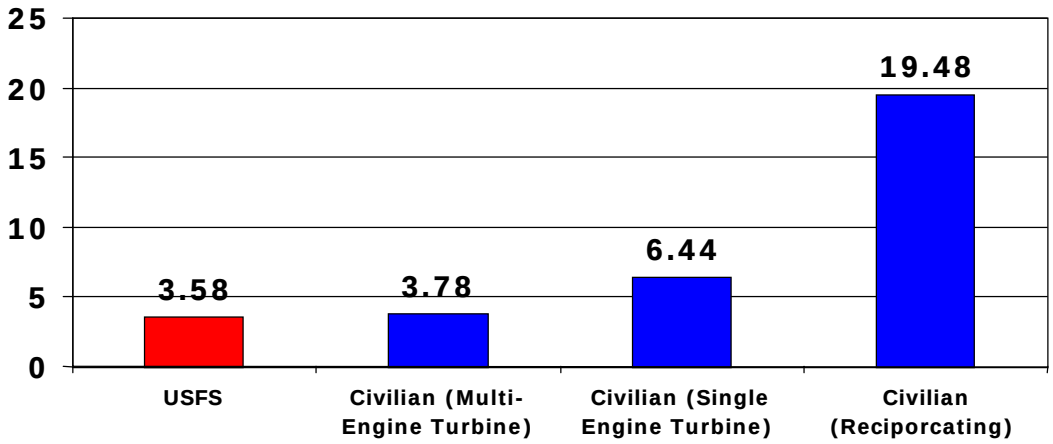
- Between 1968 and 1973, the Forest Service had 104 accidents that injured 47 people and killed 19 others, resulting in a call from the Chief for an evaluation of helicopter management activities.

- The implementation of enhanced helicopter management following the adoption of recommendations from the National Helicopter Operations Study in 1974 has resulted in dramatic reductions in mishap rates over the past two decades (source: USDA Forest Service Safety Office Database)



USDA FS Helicopter Accident Rates
(per 100,000 hours flown)

In spite of the hazardous nature of the fire mission, helicopter mishap rates are now at or below civilian benchmarks for both turbine and reciprocating fleets (FY 2000 USDA FS Safety Summary)



Conclusions. The steps taken to provide for safety and effective helicopter utilization have been extremely successful by any quantitative measure. We have increased helicopter utilization by over 1000% in the past 20 years while *simultaneously reducing the mishap rate by over 600%* (FY 2000 USDA FS Safety Summary). The USDA Forest Service helicopter operations are now (FY 2000) statistically safer than the civilian reciprocating and turbine fleet at large (NTSB database, FY 2000). *These data quantitatively underscore our commitment to safety as a core value.*

SafeCom Summary

With fire season beginning early this year in the Southern, Eastern and Southwest Areas, we've already seen a few instances that point to people experiencing fatigue and complacency. We've seen three small fixed-wing aircraft run out of fuel, two that were working for states had to make emergency landings in fields. Keys tossed into the rotor system, necessitating replacing the main rotors, and aircraft and pilots working for days before having cards checked, to find out that they weren't carded.

The following are a series of messages from Aviation Safety Managers I feel are worth sharing.

✈ Larry Hindman, Region 3 Aviation Safety Manager recently sent out this message: We have had 2 SafeComs submitted in the last few days that deal with "near misses" relating to windy conditions, one with a helicopter and one with a SEAT. Both of these should serve as good reminders to all of us that many of the same things that adversely effect fire behavior (high winds, steep mountainous terrain, high temperatures) also adversely effect aircraft performance. If your fire is "blowing up", recognize that any aircraft operations are being conducted in a higher risk environment than may be appropriate. Also, if you hear comments from pilots like "it's getting a little bumpy up here"; it may be time to shut things down.

✈ Chuck Allen added this to Larry's message: A very good idea from Larry about shutting operations down. In the old days, you couldn't get a pilot working a fire to admit that it was bad or ineffective out there and they shouldn't be continuing the operations. Nowadays, that isn't so. Too many of them have had to attend Memorial services, (and sometimes they couldn't get away to go) for their friends and coworkers. Check out the AIRWARDS we have been giving out, on the Forest Service Aviation Safety Homepage. We have been telling these folks, "Thank you" for saying no. And we must continue to do just that.

✈ Dan Zimmerman, Northeast Area Aviation Safety Manager added this to Larry's message: You will find an example illustrating how critical it is to measure the risks and apply safety measures regarding our day-to-day operations in aviation management. Region 3 has experienced 2 SafeComs submitted in the last few days dealing with "near misses" related to windy conditions; one with a helicopter and one with a SEAT. These are related to fire-weather conditions, however, it doesn't take a fire to have windy conditions that can result in the same situation. Some 40-plus such incidents of 'near misses' (or near mid-air crashes) were reported last fire season alone with some speculating that there were even more. Let's take a minute to think about this. When conditions are less than acceptable or favorable to fly, it is OK to shut down an aircraft-supported operation! You will not be fired, reprimanded, or disciplined in any way if you do so based on conditions that provide sound reasoning in your judgment. Sometimes, **YOU** as the user must step forward to make this hard decision, as others may not feel it within their 'employee-power' to shutdown. **One person can make a difference.** The adverse conditions will pass and a better day will provide better conditions that will be

within the parameters to operate in a safer and more sound manner. Even in the heat of fighting wildland fires during extended aerial-attack fire suppression missions, a pulse must be taken periodically to measure fatigue and stress of people in the air and on the ground. Risk analysis and assessment must be a significant factor in the planning and daily operation of your project utilizing aircraft services. BE SMART; not aggressive and not fearful.

Weigh the risks regardless how small or large they are in order to reach your decision and comfort level. If you do not know, network with your counterparts and/or aviation specialists and obtain a second or third opinion. We're only a cell phone call away from each other. Safety is discipline. Recognizing this, we can all benefit and meet our objectives. Our objective in aviation management in the Area is to operate within the parameters of policies and procedures and place the health and welfare of people first and foremost, and reducing the level of risk as much as possible. Thanks Larry and Chuck for sharing and thank you all for taking the time from your busy schedule to read this message.

✈ These are all very good messages, thanks for sharing.

Thanks to all of you out in the field, our SafeCom system is working very well. We would also like to encourage folks to submit more positive SafeComs, such as: what people are doing to improve safety, performance and communications, reduce risk, limit exposure and to prevent reoccurring problems. We are beginning to see a few more positive SafeComs this year, but realize that there are many more that we never hear about. ***It is our philosophy that we learn more by reviewing what we do right, than from what we do wrong.***

Our Mission in Aviation Safety is to provide uncompromising service in all matters pertaining to interagency safety to protect our people and preserve our resources.

Our Goals are to:

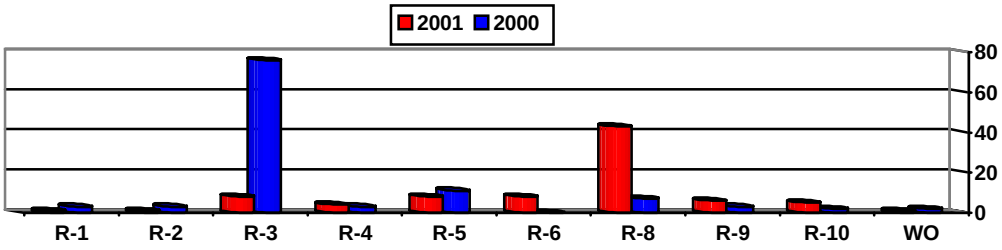
- Improve performance of all aviation personnel through information transfer, recruitment, selection, training and education.
- Reduce risk by limiting unnecessary exposure to hazards.
- Ensure continuous improvement through standardization and quality assurance processes.
- Prevent reoccurring error through expert mishap investigations, recommendations and action items.
- Effectively integrate with the interagency community.

The following charts are based on SafeComs that occurred from May 1 through May 31 of this year and last year. There were 85 SafeComs reported this May compared to 110 last May.

Included in this report are representative samplings of the SafeComs reported in May of this year. To view all the USFS SafeComs click on the link to SafeComs below. Pick the options you want to search for, then click on submit, or simply click on submit to view all of the latest SafeComs. http://www.aviation.fs.fed.us/safecom/psearch.asp

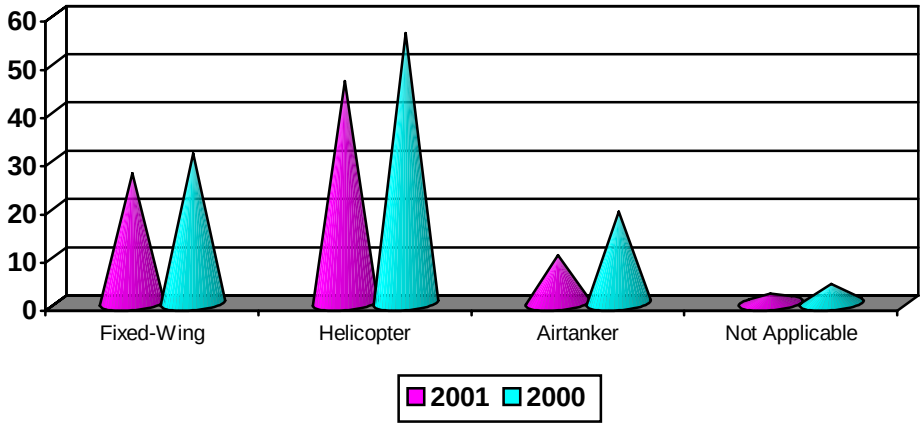
SafeComs by Region

The chart below shows the number of SafeComs reported by each region for May of this year and last year, it's pretty easy to determine where all the fire activity was!



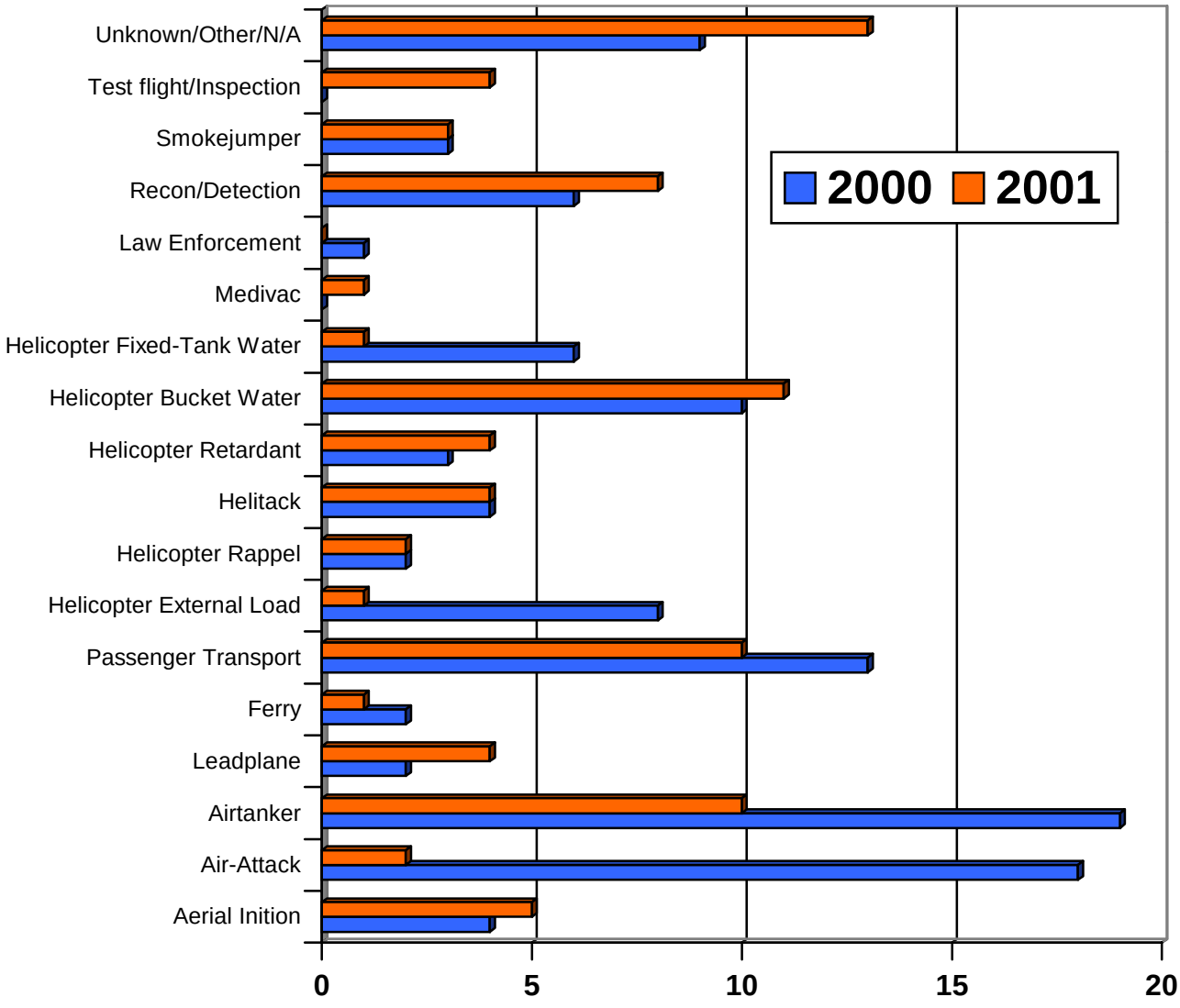
SafeComs by Aircraft Type

Helicopter SafeComs accounted for 54% of the SafeComs this year compared to 51% last year. Fixed-wing SafeComs were 28% of the SafeComs this year compared to 23% last year. The percent of Airtanker SafeComs decreased from 17% last year to 12% this year. The charts below show the number of SafeComs reported by aircraft type for May of this year and last year.



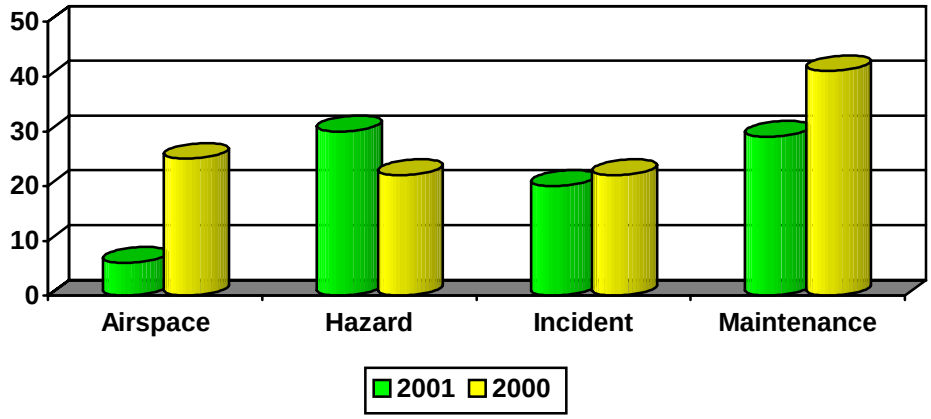
SafeComs by Mission Type

This year helicopter bucket water drops had more SafeComs reported than any other mission, 13% compared to 9% last year. Airtanker retardant drops decreased this year from 18% last year to 12% this year. Passenger transport accounted for 12% both this year and last year. Air-Attack SafeComs were significantly lower this year at 2% compared to 16% last year. The chart below shows the numbers of SafeComs reported by mission type for May of this year and last year.



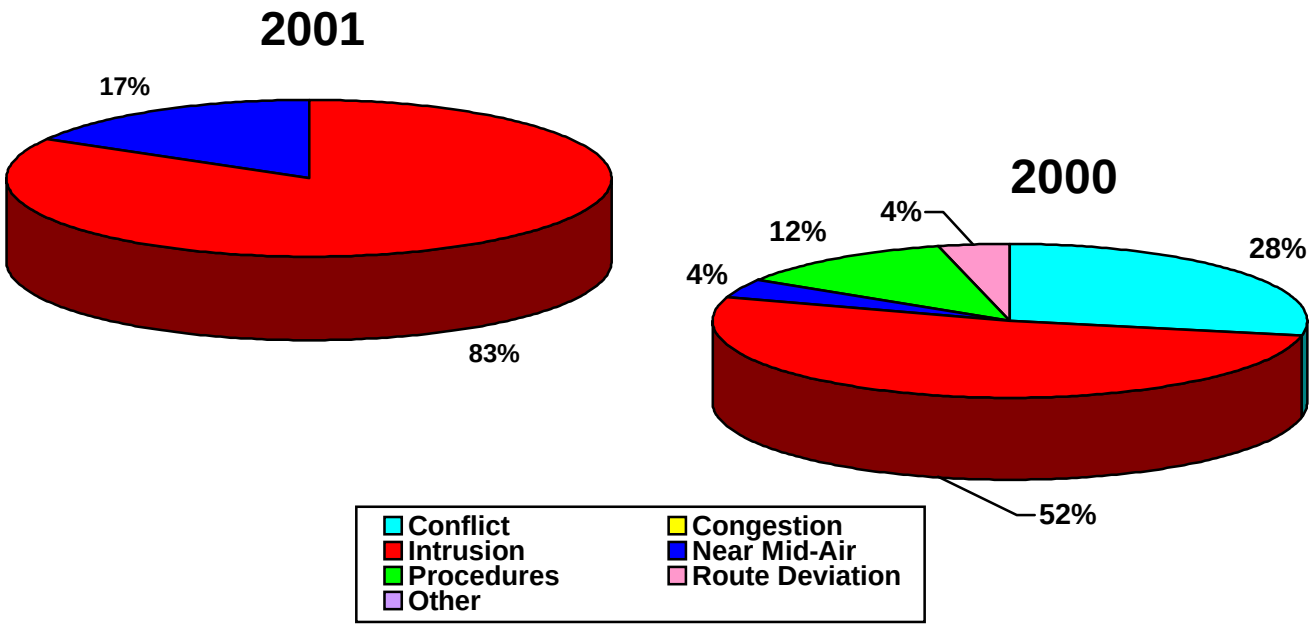
SafeComs by Category

SafeComs in the Hazard category were the highest at 35% this year compared to 20% last year. Airspace SafeComs were significantly lower this year at 7% compared to 23% last year. Incident SafeComs were 24% this year and 20 % last year. Maintenance SafeComs were also comparable at 34% this year and 37% last year. The chart below shows the number of SafeComs reported by category for May of this year and last year.



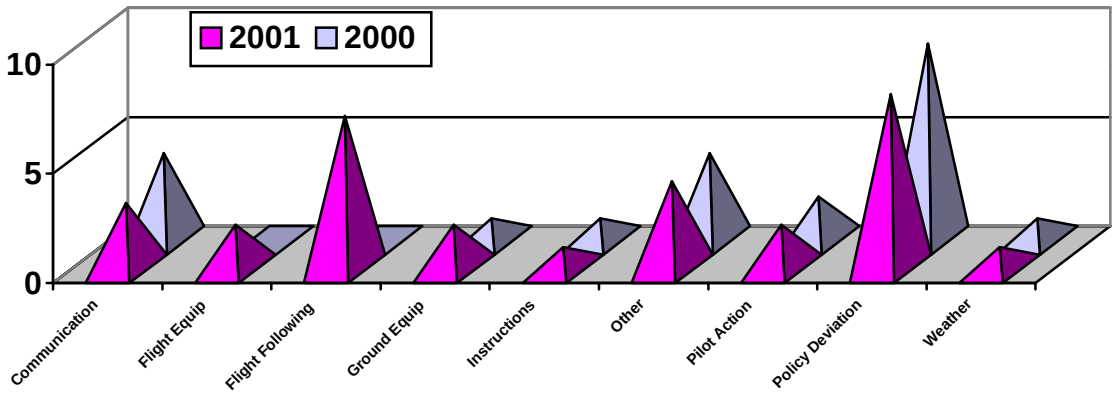
Airspace SafeComs

There were six SafeComs reported in this category this year compared to 25 last year. There were five intrusions and one near mid-air this year. Last year there were 13 intrusions, 7 conflicts, one near mid-air, three procedures and one route deviation. The charts below show the percent of Airspace SafeComs by sub-category for May of this year and last year.



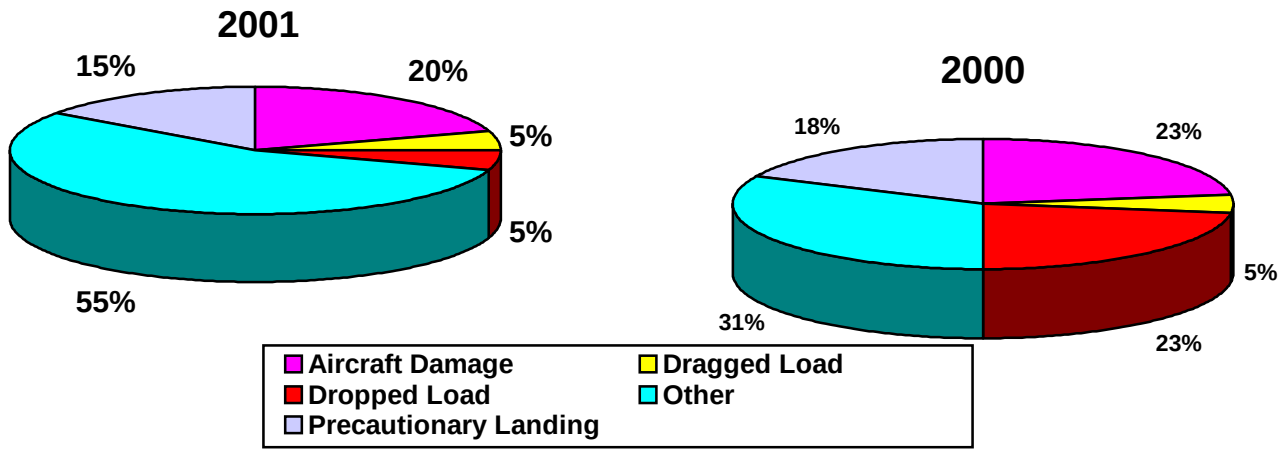
Hazard SafeComs

There were 30 SafeComs reported in this category this year compared to 22 last year. Policy deviations were the biggest problem in this category both this year and last year. They accounted for 27% of the Hazard SafeComs this year and a whopping 40% last year. It is critical that we are cognizant of our policies and follow them to ensure safety. Flight following is another problem area this year with 23% of the SafeComs in this category. The chart below shows the number of Hazard SafeComs reported by sub-category for May of this year and last year.



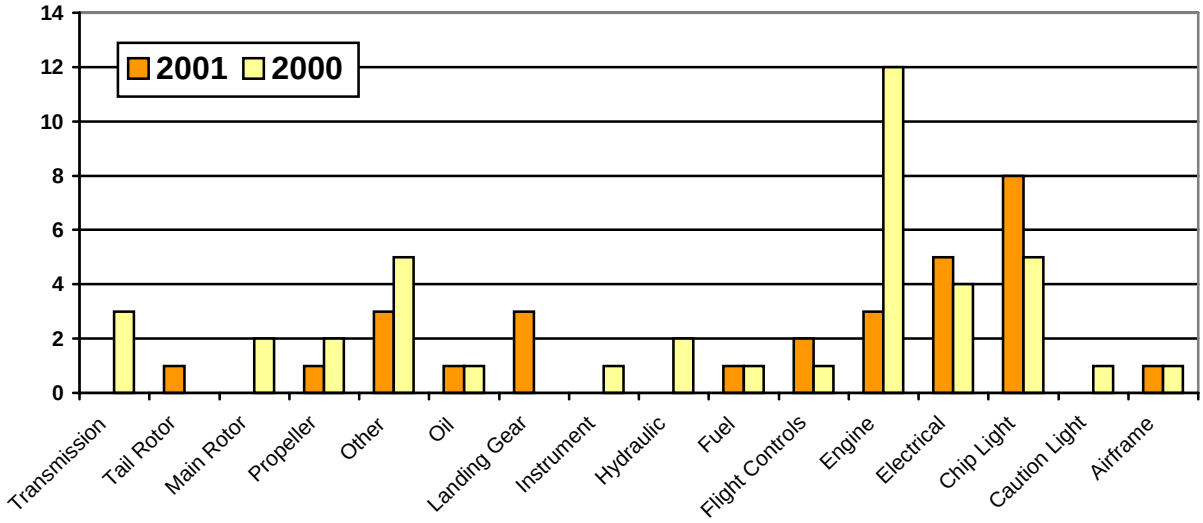
Incident SafeComs

There were 20 SafeComs reported in this category this year compared to 22 last year. Most of them this year (11) were reported as other, 4 aircraft damage, one dragged load, one dropped load and three precautionary landings. Last year there were 5 aircraft damage, one dragged load, 5 dropped load, 7 other and 4 precautionary landings. The charts below show the percent of Incident SafeComs by sub-category for May of this year and last year.



Maintenance SafeComs

There were 29 SafeComs reported this year compared to 41 last year. Engine SafeComs were the most reported last year while chip lights were the most reported this year followed by electrical. The chart below shows the number of Maintenance SafeComs reported by sub-category for May of this year and last year.



SafeCom #: **01-86** Date: **05/03/2001** Time: **1340**

Location: **Hayward Airport** State: **Wisconsin** Region: **9**

Mission Type: **Training (other)** Procurement: **Contract**

Aircraft Type: **Bell 407**

Narrative: pilot was concerned with a "shimmy" not unlike ground resonance. Pilot requested mechanic to come over before decreasing idle to observe the "shimmy". Mechanic felt something was wrong, had pilot shut-down aircraft and inspected main rotor mast (no problems) then moved to the tail-rotor assembly. Mechanic found two bolts that attach tail-rotor gear-box assembly to the tailboom had come slightly loose during the flight; as a result the vibration had caused the bolt holes to increase slightly in diameter causing play in the tail-rotor assembly. Mechanic/Pilot recommended aircraft to be grounded for obvious reasons; manager contacted Forest Aviation Officer and dispatch and aircraft made unavailable until repairs can be made.

Corrective Action: Regional HOS Informed National Maintenance inspector and is working with Regional Maintenance inspector to return the aircraft to service after tailboom and components replacement. The National Maintenance inspector is working with Bell to find out about any significance of this issue as it may relate to the tail rotor AD presently affecting this aircraft. More information to follow. Helicopter manager ensured photographic documentation of damage was made and statements taken for possible need for further evaluation. Mechanical Deficiency report will be issued to FAA. Bell Helicopter reps replaced the tailboom and gear box and encountered vibrations on the maintenance run up. The tail rotor was also replaced and vibration was no longer present. Aircraft will be returned to service following concurrence from RAO and National Maintenance Inspector. Separate report will be filed with more specifics. Helicopter Manager and HOS submitted for Airwards for identifying potential national hazard. No further action

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SafeCom #: **01-91** Date: **05/08/2001** Time: **0800**

Location: **Ogden** State: **Utah** Region: **4**

Mission Type: **Inspection (Aircraft)** Procurement: **Fleet**

Aircraft Type: **DeHavilland DHC6-300**

Narrative: On 05-07-01 a maintenance test flight was ordered for our twin otter for the replacement of engines and propellers. On preflight inspection it was noticed that the ailerons were a little stiff (An inspection was also just completed, and the primary flight control cables were also replaced.). With the stiffness there seemed to be a little more noise then usual coming from the aileron autopilot servo which sits just behind the copilot seat inside a panel close-out. The stiffness was (we believed at the time) contributed to the new cables, tensions and maybe a autopilot capstan that might need adjustment. The decision was to continue the flight and have the cable tensions and the capstan rechecked when we got back. The

maintenance test flight went well, and upon completion of the flight, the discrepancies were written up (ailerons seemed stiff....recheck cable tensions and cable runs).

Corrective Action: On 5-08-01 the Shop that performed the maintenance on the aircraft found a aileron cable ridding between the top of a pully and the pully guard (this was causing the friction)and there were about 4 broken strands of cable found at that site (Station 101 on the airframe). The shop removed and replaced the damaged cable. All of the other cable runs and tensions were rechecked. The aircraft was placed back in service after additional test flights. RASM Remarks: Lessons learned: If it dosen't feel right, it probably isn't, and in hind site we should have grounded the aircraft and performed further checks before the test flight.

SafeCom #: **01-93** Date: **05/22/2001** Time: **1930**

Location: **Carpenter Incident** State: **California** Region: **5**

Mission Type: **Fire, External Load (longline)** Procurement: **CWN**

Aircraft Type: **Bell 206B3**

Narrative: While transporting a 55 gallon water blivit, via a 50' long line,the pilot had to cross a highway enroute to the Incident (Carpenter fire). Due to daylight limitations (shut down time 2030), there was inadequate time to move the helibase operation to a different location to avoid crossing the highway. The pilot took a route that mitigated flying near/around residents around the Truckee airport. The pilot waited until all traffic was cleared from the highway before crossing with the longline cargo.

Corrective Action: Crews must be aware of probable flight routes and plan accordingly,espically with the increase of urban incidents. Pilots must also be aware of the FAR's pertaining to persons and property. Crews should be prepared to have road blocks put in place by LE. Another item for daily briefings!!! No further action required. RASO, R-5

SafeCom #: **01-94** Date: **05/08/2001** Time: **0815**

Location: **Ithaca** State: **New York** Region: **9**

Mission Type: **Passenger Transport** Procurement: **CWN**

Aircraft Type: **Cessna 441**

Narrative: As per instructions stated in a flight itinerary/schedule, the Chief of Party for a Regional Office group enroute from Ithaca, NY to Rutland, VT did not contact the Green Mountain Dispatcher by phone before leaving Ithaca. The schedule called for them to leave Ithaca at 0800 and report their departure to the Dispatcher. At 0815, the Forest Aviation Officer (who was monitoring the phone at that time) called the Fixed Base Operator at Ithaca to ask if they had knowledge of the flight leaving. They recalled the plane taking off around 0800. The group arrived at Rutland on schedule at approximately 0900 with no problems encountered during the flight. An FAA flight plan had been filed.

Corrective Action: This is normally taught at chief of party training and the person responsible was new to this duty. She will receive this report and I will go over that part of training again. No further action necessary.

SafeCom #: **01-95** Date: **05/24/2001** Time: **0945**

Location: **Peppermint Helibase, White Fire** State: **California** Region: **5**

Mission Type: **Fire, Passenger Transport** Procurement: **Contract**

Aircraft Type: **Bell 212**

Narrative: Helicopter 538 (N873HL) was involved in a troop shuttle to H-1 on the White Fire. During the loading of passengers and cargo there was some confusion about whether or not the helicopter was fully loaded. The Parking Tender was new (first fire), and was not in position to see both sides of the aircraft. As the loaders on the side closest to the Parking Tender(PT)gave the PT the all-clear signal (thumbs up) the PT assumed that the other side was fully loaded. The PT proceeded to give the all-clear signal to the pilot, and began to show the standard hand signal for Lift-up and the pilot responded. The loader on the far side of the aircraft felt the skid start to lift under his foot and backed away from the aircraft, leaving the rear passenger door open. As the pilot flew away he was notified of the problem and returned to the Helibase, the Loaders closed the door and the pilot resumed the troop shuttle.

Corrective Action: The Parking Tender and Loading crew were rebriefed on their responsibilities ,proper procedures and commitment to conducting a safe operation. Maybe there was a tencency to rush the loading a bit? Bad habit to get into. There isn't a fire that hasn't gone out!! A brand new Parking Tender might have been a little nerveous. Managers need to watch these situations closely. RASO, R-5

SafeCom #: **01-102** Date: **05/04/2001** Time: **1500**

Location: **Bell Field Helispot** State: **South Carolina** Region: **8**

Mission Type: **Fire, Reconaissance** Procurement: **Contract**

Aircraft Type: **Bell 206B3**

Narrative: ROTOR STRIKE INCIDENT ON 05-04-2001 WITH N206HE EVENTS FROM DEPARTURE TO SHUT-DOWN AT BELL FIELD HELISPOT Helicopter 6HE departed Seed Orchard Helibase at 1441 with Pilot, helitack crewmember and manager. The mission was to pick up FMO at newly created Bell Field Pond Helispot and then conduct a recon flight of previous control burns in the vicinity. The Helicopter arrived at the HS about 1457 and made contact with a helitack crewmember who was waiting at the north end of the helispot. After making several fly overs, manager talked with pilot about what he thought about the spot. Prior to this mission, we had talked about an alternative landing zone if this spot was not comfortable for the pilot. Pilot informed crew that he could make it and landed safely at 1459.

Manager informed pilot he would exit helicopter and allow helitack crewmember to fly left front seat, while the manager stayed at the Helispot for flight following. This would also help with weight reduction for take off from the helispot. After exiting aircraft, the manager briefed helitack crewmember. He was to take front left seat and the manager would stay at the helispot during recon. Manager also took helitack crewmember's portable radio, motioned for him to board and then walked over near helitack's truck to Marshal the helicopter. Helitack crewmemer started to enter the helicopter but then realized he had vehicle keys to the truck in his pocket. As manager turned around to face helicopter, helitack crewmember was holding up his keys which had a carbinner attached to key ring. Helitack crewmember then threw the keys in the direction of marshaler (manager) and they struck the rotor blade about 10 inches from the end of the rotor blade. Marshaler was about 40 foot in front of aircraft and helitack crewmember was crouched low near the left seat door of the Helicopter at the time of the rotar strike. As soon as this occurred, manager and pilot communicated shut-down and helitack crewmember stayed low near the skids while maintaining a visual on the pilot. All personnel (pilot plus 1 crewman on board aircraft) and marshaler and helitack crewmember held positions until rotor blades were no longer turning. No injuries occurred although mangled keys, key ring and carbinner were projected down and out away from the turning blades. As soon as rotors stopped and it was confirmed that there was no injuries, manager asked helitack crewmember to call dispatch and report we were safe at the HS but were shut down. This occurred at 1505. We inspected and confirmed rotor strike blade damage and pilot contacted mechanic while manager and helitack crewmember contacted dispatch and COR to inform them we were out of service. Load calculations and manifests were done prior to the flight that day and all passengers and pilot had on full PPE. Both Manager and helitack crewmember had visors down for face protection during the incident.

Corrective Action: RAO Region 8: Investigated incident and found no contributing factors i.e. fatique, unsafe attitude, and lack of training. This incident appears to have occurred as a result of a momentary impulse of trying to expedite giving someone keys to a truck. This was clearly an incident with potential. When the keys struck the rotor blade, they fragmented and traveled at a high velocity which could have resulted in serious injury to someone.

SafeCom #: **01-103** Date: **05/09/2001** Time: **1130**

Location: **Henney Ridge, Cordova** State: **Alaska** Region: **10**

Mission Type: **Passenger Transport** Procurement: **Rental**

Aircraft Type: **Aerospatiale 350**

Narrative: xxxxx landed at the Henney Ridge communications Site at approx. 11:10 local. The helo was positioned over the helo pad with the tail pointed toward the down hill side of the pad. The pilot settled the helo into the location and shutdown. Three Forest Service Pax were onboard. The FS personnel deplaned and began work on the Heavily ice covered tower approx. 75 feet to the front of the helo. At approx. 11:30 local time the helo began to slide from the pad toward the rear. It slid approx. 6 feet, hesitated for a second and then slid again to the rear. After a slide of approx 40 feet the tail boom impacted the snow cover and stopped the helo slide. There was about 6 inches of snow and ice mix on the up hill side of the helo pad. The down hill side of the pad was visible, although there was enough ice on the pad to prevent

the skids from touching the wood. The skid impressions in the snow over the helo pad were less than 2 inches deep. The snow pack off of the pad was hard and crusted with ice. Damage to the helo appeared to be limited to the lower vertical stabalizer area, and the tail of the skid/snow pads. Helicopter Program Manager: After reviewing the incident with the participants, the helicopter was landed on an elevated helipad that was completely covered in snow with an aproximately 4-6"build-up on the front of the pad. The AS 350 was ski - equipped. The pad is not visible in the photos. The wind was not blowing and there was no work going on at the helipad or helicopter at the time of the incident, the reason for the helicopter beginning it's slide was not determined. The aircraft lower vertical fin was damaged, the aircraft was flown off the mountain to the nearest airport for repair.

Corrective Action: RASM: The snow at this time of the year can be extremely hazardous due to thawing, freezing and new snow, additional contributing factors to this incident include the aircraft being ski-equipped, the aircraft being parked on a slight incline due to snow/ice build-up on the helipad, and the pilot's decison to shutdown with the aircraft on an incline and the tail pointed downhill. Potential problems to helicopter operations due to spring snow conditions include: Aircraft sliding on the surface. Rear of skids breaking through (heavier), while the aircraft is running striking the M/R or T/R (especially while loading or unloading passengers). During slope landings, the downhill skid breaking through (because it is heavier) and aircraft rolling over or not being able to takeoff. Aircraft settling in the snow causing M/R blades to become a hazard to personnel exiting the aircraft or potentially striking gear being carried from helicopter that would normally be fine. Skids getting stuck under obstructions after breaking through the surface causing the a/c to roll over on takeoff. Guidelines for spring time snow landings(not rules): Passengers should only be loaded/unloaded with the a/c at full RPM or shut down with the rotor blades completely stopped (the passengers shifting weight can cause the a/c to break through causing the aircraft to roll over or a tail rotor strike. Slope landings should be avoided due to the additional weight put on the downhill skid - even at full rpm causing similar problems. Skids should be inspected after landing to insure they are clear of any obstructions under the snow prior to takeoff. If a rotor brake is installed, after shutdown stop the rotor system as soon as possible - as the rotor blades coast down and generate less lift, weight is transferred to the skids, this is an extremely hazardous time because there are no options if the aircraft breaks through the snowcrust and any resultant blade strike will cause extensive damage. If the surface is windblown and hardpacked - don't lose your helicopter, it is hard to explain. As your passengers deplane - how far are they sinking into the snow, if it is knee deep or higher, a hazard exists to your helicopter. If the snow conditions are bad - drop off your passengers with the aircraft at full RPM and relocate to a better spot to shutdown. In conclusion spring snow conditions are not business as usual - select level landing spots, insure that pilots test the snow before letting the passengers out or shutting down. Dispatch and the contractor did an excellent job responding to this incident in a timely manner, preventing any further hazard or risk to FS and contractor personnel.

SafeCom #: **01-106** Date: **05/07/2001** Time: **1930**

Location: **Jefferson Helibase, Naches RD** State: **Washington** Region: **6**

Mission Type: **Fire, Aerial Ignition (Prescribed)** Procurement: **CWN**

Aircraft Type: **Bell 206B3**

Narrative: While on a mission doing aerial ignition the tail rotor gear box chip light came on. The helicopter returned to Jefferson Helibase where the pilot removed the chip detector. A small sliver of metal was found. The pilot contacted the company mechanic who was to arrive the next morning for futher inspection. The mechanic arrived approximately 1100 on 5/8. He drained and inspected the oil in the gear box and replaced with fresh oil. The helicopter did a run-up and flew for about 10 min. Upon landing the mechanic pulled the chip detector plug and found no indication of metal. The ship was put back in service. The aircraft flew for another 1.5 hours when the chip light in the tail rotor gear box came on again. At that time the Helicopter was grounded and was replaced by another helicopter from the company's home base.

Corrective Action: When the helicopter was put into availability after the first chip light XXXX XXXXX, the Aviation Maint. Program Manager was contacted and approval was given. After the second chip light the helicopter company elected to swap helicopters. Processes were followed and the Helicopter Manager took the necessary actions. Good Job! RASM: Appropriate procedures were followed. No additional actions.

SafeCom #: **01-112** Date: **05/16/2001** Time: **1550**

Location: **Hurst Hammock** State: **Florida** Region: **8**

Mission Type: **Fire, Leadplane** Procurement: **Fleet**

Aircraft Type: **Beechcraft 58**

Narrative: May 16, 2001 During flight operations over the Hurst Hammock fire the air attack pilot and the ATGS observed an intruder helicopter at their altitude (2000 ft MSL). Sudden maneuvering was required to avoid collision. The intruder aircraft then descended to 1500 ft and into the path of the lead plane. The lead plane pilot then maneuvered to avoid collision and contacted ARTCC and asked if they were working a helicopter in the vicinity of the TFR over the fire. ARTCC stated that they were not. Lead maintained visual contact with the intruder aircraft and tanker operations were suspended until the intruder departed. The aircraft maneuvered unpredictably in the vicinity of the fire, following the participating aircraft. Positive identification was made that the intruder was a media helicopter and it was determined that he/she was maneuvering to photograph firefighting operations. At one point the intruder departed the fire to film a fire-fighting helicopter dip water and then he/she chased the firefighting helo at the same altitude to the drop site. All fire-fighting operations were ceased and the intruder departed. Lead followed the intruder to class C airspace (approximately 2 mile to the East) and ensured that approach control had radar contact with the intruder aircraft. Lead then coordinated with the fire and ATC to return to Pensacola Regional Airport to meet with the ARTCC supervisor.

Corrective Action: Near mid air forms were completed and filed with the FAA. The FAA supervisor informed the lead plane pilot that the intruder helicopter pilot had also violated Class C airspace and would be violated for entering the special use airspace and the Class C with out clearance.

SafeCom #: **01-115** Date: **05/15/2001** Time: **0800**

Location: **Bountiful Skypark** State: **Utah** Region: **4**

Mission Type: **Research** Procurement: **CWN**

Aircraft Type: **Bell 206L3**

Narrative: 05/14/01-1540hrs. I arrived at XXX helicopters hanger to complete the pre-use inspection (HCM-2)on A/C NXXXX in preperation for a GPS guidance evaluation flight scheduled for 05/15/01. When I received my briefing from dispatch I was told the FAA had authorized the installation of GPS systems on this aircraft and that it was being carded by proper authorities. The goverment project coordinator was at the hanger and we discussed the different GPS guidance systems that where to be tested the following day. The pilot identified on the project safety plan had been changed so I was introduced to the replacement pilot, we discussed his briefing and project knowledge I checked card currency and continued my A/C condition inspection. An OAS aircraft equipment specialist was in the process of a recarding inspection along with several other technicians working on the guidance system were involved around A/C NXXXX. I completed my visual inspection of the A/C locating the DATA record card in the plastic document holder mounted on the console the expiration date 04/19/01 was posted. I returned it to the holder thinking OAS must have the current one. I didn't talk to the OAS inspector not wanting to distract him from his progress. I talked again to the project coodinator and pilot deciding to hold a briefing in the morning with all involved including the second CWN manager assigned to the project.I left the classic hanger shortly afterwards (approx.1655hrs.) 05/15/01-0740hrs. Aircraft NXXXX was outside the hanger in the process of preflight and all indications where it was project ready. I was approached by the project coodinator with a request that a Goverment Technician along with a Technical Rep. be included in the flight to monitor the guidance equipment making sure the most accurate data be acheived for use by the Missoula TDC. This was a deviation from the project safety plan but told him I would call the Forest Aviation Officer and request this modification to the plan. After a phone discussion with FAO during which he did express concern over this request he said he would place the amendment to the plan requesting that we refer to IHOG regulations involving this type of reconnaissance flight. Proper Personel Protective Equipment was provided and full aircraft and safety briefing conducted. I left Classic Hanger to provide observation duties and local flight following at project site located in Lambs canyon,Second CWN manager remained at classic hanger. 3 flight hours where completed. 05/16/01-0745hrs. Needing the current A/C card experation date to complete my paperwork I again removed the card from the console and found that the expired card was the only Data card inside the A/C. I immediately grounded all remaining project flight and called Office of Aircraft Service and Regional Aviation Officers regarding the statis of NXXXX and card currency? Aircraft NXXXX remained grounded until proper aircraft authorization and card currency was received. I allowed myself to become distracted from one of a managers most important duties,that of assuring the aircraft and pilot are carded for the project assigned. Though all indications led to aircraft currency OAS had with held card due to some corrective actions required. The vendor knew of these corrections because they signed and received notice of the deficiencys but they did not remove this aircraft from project availability. This, however, does not relieve me of my responsibility.

Corrective Action: RASM Remarks: Performing follow-up. On 5-18-01, I spoke with the Regional Aviation Maintenance Inspector (AMI) and the Regional Helicopter Operations

Specialist (HOS). Unbeknownst to the helicopter manager, the helicopter had some minor discrepancies that kept OAS from issuing the new helicopter data card. The Vendor had also not informed the manager of the expired card and the open discrepancies. The Manager did the right thing by shutting down the operation when he found out that he had a helicopter with an expired card. The Regional AMI spoke with the OAS inspector and an extension to the expiration date was granted for only the completion of this testing, then the card was pulled. The Vendor was chastised for this incident. The manager was counseled for for his inactions (assuming the card was reissued). Lessons learned: 1) Don't assume, complete your checklists before you start your plan. 2) I understand things were also a little rushed. Don't become complacent and mission oriented. We have rules and policies in place and we have to follow our own instructions, taking the time to do them properly. PLEASE share this SAFECOM with your crews!

SafeCom #: **01-116** Date: **05/18/2001** Time: **1000**

Location: **Scott Valley Airport** State: **California** Region: **5**

Mission Type: **Fire, Reconnaissance** Procurement: **CWN**

Aircraft Type: **Bell 206L3**

Narrative: After returning from a recon of the jones fire, the helicopter was winding down, there was a 407 just starting up approx. 50 ft. behind the L-3. The pilot of the L3 thought the 407 would wait until he could get his blades tied down or at least stopped. When the 407 started to lift the L-3 pilot threw the tie down strap over the blade to catch the almost stopped rotor blade. The pilot of the L-3 expressed concern that the rotor wash af the 407 could have caused a mast bump and wanted me to put out this safe com just to get people thinking of this sort of situation.

Corrective Action: The L-3 pilot is correct. Another helicopter's rotorwash on a slow turning rotor system can create extreme flapping, espically if the droop stops are not in place. It can also be extremely dangerous for anyone walking near the tip path plane of the slowing rotor system. The 407 pilot is most likely aware of this but is/should be directing his attention to the parking tender. This is another HEADS UP that should be included in the morning safety briefing. This was a good call on the part of the L-3 pilot. RASO R-5

SafeCom #: **01-124** Date: **05/18/2001** Time: **1430**

Location: **Goldwater Helispot** State: **Arizona** Region: **3**

Mission Type: **Fire, Rappel** Procurement: **Contract**

Aircraft Type: **Aerospatiale 350B2**

Narrative: While performing cargo letdown on recurrency rappel, the figure eight came off the locking carabiner as the load was dropped, and went out the door. Rappellers and Spotter controlled the descent of the load (100 lbs) and it settled to the ground gently. The remainder

of the rappel sequence continued without further incident. Rappellers found the figure eight still wrapped around the letdown line.

Corrective Action: We re-enacted the cargo letdown, and found that as the figure eight sits on the floor, it sits at a 45 degree angle to the carabiner, and as the load is dropped, has a tendency to twist. Somehow, the figure eight twisted, and came off the carabiner, and happened so fast, that none of us saw it. At first, we thought the figure eight had broken off the carabiner. When I connected the figure eight, I remember locking the carabiner, and even checked it again before performing the rappeller checks. The gate may have come unlocked while we entered and moved around the cabin. We have decided to use two locking carabiners at the hardpoint, in order to allow the figure eight to lay flat, and ensure the carabiners are locked prior to the letdown sequence. RASM COMMENTS: Discussed this with Regional HOS and HEMG/Spotter. The only way this could happen is if the locking "nut" backs off enough for the gate to open. Discussed procedure changes discribed above, i.e., two locking carbiners and a physical and verbal final check prior to deployment. Contacted MTDC and National Aerial Attack Systems Specialist also.

SafeCom #: **01-125** Date: **05/21/2001** Time: **1000**

Location: **Petersburg** State: **Alaska** Region: **10**

Mission Type: **Passenger Transport** Procurement: **Other**

Aircraft Type: **Cessna 180**

Narrative: On a routine mission to pick up a passenger in Hoonah and return them to Petersburg radio contact was lost for about 1 hour. When the 30 minute check was missed a radio search was conducted. When that did not yield results a phone call to Sitka Dispatch was made to see if he had called them, he had not so a call to Hoonah Ranger District was made to see if he had arrived. They sent someone to see. A call was also placed to Flight Service to see if they could raise him on VHF. The district and flight service reported him just leaving Hoonah for Petersburg. Discussed flight following procedures with pilot and reminded him of FS policy. Also emphasised that dispatch will immediately begin search and rescue procedures if no contact is made in a 30min period. I told this pilot that more and more flights will be scheduled between these boundries and reminded him he had the list of all FS frequencies. I discussed the Moore Mt repeater specifically (giving him the frequencies) and told him this repeater had the best coverage for this side of Admiralty Is. I also told him any means of check-in such as Flight Service, was acceptable when he could not reach the Forest Dispatchers.

Corrective Action: RASM - This problem was foreseen as a result of the unification of the Tongass National Forest and the resulting flights across the old area boundaries. Additional recommendations: 1. The Tongass needs to develop a procedure/process for handing an aircraft off from the initiating dispatch office to the receiving dispatch office. 2. The initiating dispatch office can help solve this problem by providing the repeater name and frequency for the aircrafts intended route of flight to contact the receiving dispatch office, as well as the phone number aircraft were missing and finding "them" even though the aircraft were in another dispatch area.

SafeCom #: **01-136** Date: **05/22/2001** Time: **1115**

Location: **Mallory Swamp** State: **Florida** Region: **8**

Mission Type: **Fire, Aerial Ignition** Procurement: **CWN**

Aircraft Type: **Bell 47**

Narrative: At approximately 1000 a Bell 47, tail number 200KV, overflew the helispot and headed toward the incident. The pilot of 298EH was notified by radio, he in turn notified the pilot of 215EL (both ships mediums doing bucket work). Radio traffic indicated that neither helicopter, lead plane, or air attack could contact 200KV by radio. 200KV flew parallel with and trailed 8EH and appeared to be video taping. 200KV landed at the far end of the meadow being used as a helispot and conferred with State Forestry employees. Fixed wing and helicopter pilots were notified by radio that 200KV was given the victor and two FM frequencies to use for communication. When 200KV lifted, however, and began flying around the west side fo the incident, the other aircraft could not contact him. At 1115 a State Forestry truck pulled up to the helitack at the helispot and informed us that we had better move out since 200KV's mission was to ignite a back fire on the west side of the incident and the current helispot would be burned over. Both helicopters were in need of fuel. The crew for 5EL was a reduced crew of two with no vehicle, so they joined the 8EH crew with gear and proceeded in search of a new helispot. By 1150 it was clear that a new helispot could not be found, but lead Bravo Two advised that there should be time to return the fuel truck to the old helispot and fuel. 215EL had time to get fuel before the helispot was evacuated. 8EH had just set down for fuel when 200KV overflew the area igniting with a helitorch. Ignited alumagel fell within 40 feet of the module members and the helispot was rapidly abandoned. The fuel truck almost got stuck in the sand. Radio traffic indicated all pilots aloft were beyond irritated with 200KV. 8EH flew west until he found a landing zone and the ground crew located him by 1340. The Bell 47 was located on a trailer, license #E305681, and truck with Utah plates B40043. There was no company name on the truck.

Corrective Action: Incident discussed during morning Unified Air Operations conference call, reminding all aviation personnel of the importance of communications and planning of tactical actions. Florida Division of Forestry Chief of Forest Protection resolved issue with landowner in charge of 200KV.

SafeCom #: **01-149** Date: **05/26/2001** Time: **1400**

Location: **Carlsbad Airport** State: **New Mexico** Region: **3**

Mission Type: **Fire, Retardant Drop (Airtanker)** Procurement: **Contract**

Aircraft Type: **Dromader M18**

Narrative: On the 26th of May, the SEAT was dropping on the Hidden fire, 30 miles SW Carlsbad. Upon approach to CNM the SEAT pilot spoke with Air Attack, which was departing CNM returning to the Hidden fire. Air Attack notified the SEAT pilot that they had experienced turbulent winds on departure. The SEAT pilot acknowledged and landed at CNM without

incident. The SEAT was loaded at CNM and taxied out for departure. The pilot noticed several whirlwinds and dust being kicked up on the west and southwest edge of the airport. He chose to hold for 15 minutes while the winds past the airport. The temperature hovered around 100 degrees F and winds were 15 -20 mph out of the west to southwest. Feeling comfortable that the winds had past and noticing the dust and whirlwinds had disappeared, the pilot began his departure. Upon departure at approximately 4500 feet, he experienced a severe downdraft and immediately pushed the lever releasing half of his retardant load. He delivered the half load to the fire after contactin Air Attack and notifying him of what happened and returned to CNM to hold.

Corrective Action: Submitter comments: The SEAT will be downloaded accordingly. RASM COMMENTS: Sounds like some good communicating was occurring between ATGS and SEAT regarding condintions. Good call on SEAT pilot's part to hold until he believed wind conditions had improved. This is a good example of having mission pressure not totally override good decision making. I discussed this situation with the pilot.

SafeCom #: **01-151** Date: **05/29/2001** Time: **1230**

Location: **Hidden Complex** State: **New Mexico** Region: **3**

Mission Type: **Fire, Water Drop-Bucket (Helicopter)** Procurement: **Contract**

Aircraft Type: **Aerospatiale 315B**

Narrative: Pilot Narrative: While doing bucket drops of water in support of ground crews, I was approaching a flame spot and dropped into a deep, narrow canyon preparing to drop from an altitude of approximately 50'. The canyon was surpentine and carring high, gusty and erratic winds. as I made my final approach to drop, the wind shifted to a tailwind and I started to loose lift rapidly. I dropped the water on a target and pulled max power to get out of the canyon and the winds blew the now empty, light bucket into the top of a tree causing a 6 to 8" tear in the side of the bucket. It is repairable, A standby bucket is being used effectively.

Corrective Action: RASM COMMENTS: I spoke to the helicopter manager assigned. He said that helicopter operations were suspended after this event occurred. Airtanker operations continued on the incident for a short time, then were also suspended pending better wind conditions. As you all know, we often operate on the "edge" (hopefully the safe side of the edge) regarding the environmental conditions that are typically present around wildland fires. There have been numerous accidents occur where the pilot later stated, "I'm going to shut down after just one more drop". If your thinking that, it is probably time to stop.

SafeCom #: **01-154** Date: **05/26/2001** Time: **1730**

Location: **Nature Trail Fire** State: **Florida** Region: **8**

Mission Type: **Fire, Leadplane** Procurement: **Fleet**

Aircraft Type: **Beechcraft 90**

Narrative: Lead 88T Lead 77 On 5/26/2001 we were dispatched to the Nature Trail Fire 14 miles southwest of Ocala along with Air Attack 113AB. Upon arrival we determined a Florida DOF Piper Cherokee was also overhead and we were unable to communicate with them. Shortly thereafter Tanker 09 called in and we placed them in holding until airspace was safe. We continued to be unable to establish direct communications with DOF aircraft . Through the fire IC we were able to relay to the DOF aircraft we needed more room for the airtankers and they cleared the area. Upon DOF aircraft departure Tanker 09 and others were brought in to the fire and dropped without incident. This delay could have been avoided if we could work out communications so all aircraft are aware of others positions and intentions on a common frequency.

Corrective Action: Acting RASM: We have had several issues relating to this type of conflict. The organization addressed these issues with all bases in a conference call. we need to continue to highlight these events on the SAFECOM's so we can track how we are doing.

SafeCom #: **01-155** Date: **05/25/2001** Time: **1400**

Location: **INW** State: **Arizona** Region: **3**

Mission Type: **Fire, Leadplane** Procurement: **Fleet**

Aircraft Type: **Beechcraft 58P**

Narrative: During preflight of aircraft on ground at Winslow, found excessive play in elevator at bolt attach points. After consulting R-3 aviation inspector, aircraft was ferried back to ABQ. Found on inspection,inboard hinge bearings were worn and are being replaced. Note:A thorough inspection was made of the aircraft because the aircraft does not seem to be performing as well as it should in comparison with the other R-3 Barons. The R-3 aviation inspector is inspecting and testing the aircraft.

Corrective Action: RASM COMMENTS: Aircraft is being thouroghly checked and will receive a thourogh test flight prior to being put back in service.

SafeCom #: **01-158** Date: **05/30/2001** Time: **1730**

Location: **Pineridge, La Sal** State: **Utah** Region: **4**

Mission Type: **Training (Rappel)** Procurement: **Contract**

Aircraft Type: **Bell 205A1**

Narrative: During rappel training, with the rappellers on the skids in the pre-rappel position, the pilot informed me to hold the rappellers. The winds had switched direction and the ship needed to be repositioned. While repositioning the ship the pilot informed me that we were running out of tail rotor and we brought the rappellers back into the ship. We discussed the situation and the pilot told me to cut the rappel ropes, which I did. After returning to the helibase, we again discussed the situation and the pilot said that when he had told me to cut the rappel ropes, he had invisioned me going through the normal procedure of clearing the

ropes. He further stated that at no time did he feel the situation constituted an emergency. The pilot felt we had had a terminology problem.

Corrective Action: We have reviewed emergency procedures and what warrents the cutting of the rappel ropes with the pilot. I talked with Regional Helicopter Pilot Inspector and he recommended that the ship's tail rotor rigging and cyclic needed to be inspected and tested. RASM Remarks: 6-01-01, The helicopter is currently grounded pending the outcome of the inspection of the rigging and flight tests. Follow-up is ongoing. RASM Remarks, 06-06-01: Further follow-up by the Regional Helicopter Pilot Inspector (HIP) and the Regional Airworthiness Inspector has concluded the following information: 1) Adjustments were made to the helicopter's tail rotor system per the Bell 205 A1 Maintenance Manual. Also there was some adjustments made to the Force trim brakes on the cyclic system. 2)There was also some terminology issues that were addressed with the pilot and the crewmembers (Spicifically, what "cut away" means as opposed to releasing the ropes.). 3)Maintenance test flight was completed at aircraft's gross weight for the day/time/&density altitude, With no defects/issues. The aircraft was returned to contract service. I would like to remind folks that the crew did exactly as trained to do, KUDO'S to the crew for following procedure!

SafeCom #: **01-160** Date: **05/29/2001** Time: **0900**

Location: **Alturas Airport** State: **California** Region: **5**

Mission Type: **Research** Procurement: **CWN**

Aircraft Type: **Bell 206B3**

Narrative: The Modoc NF requested a CWN Bell BIII Helicopter for a project aviation flight. The Proposed flight was for a general reconnaissance and GPS mapping of the Long/Damon noxious weed eradication project, on which 1 FS and 1 BLM employee were scheduled to participate. The aircraft arrived in Alturas at the scheduled time and upon completion of the helicopter inspection by the CWN Helicopter Manager, the flight was cancelled for the following reasons: (1) No ELT on board the aircraft (2) No First Aid Kit on board the aircraft (3) No Survival Kit on board the aircraft It was also noted on the Contract Daily Diary that the helicopter was within 3 hours of it's 100 hour inspection. The flight was scheduled for 2 hours of flight over the project area, so this may not have been a factor, but also warranted a Heads Up. Because the Helicopter failed to meet the contract specifications, a FS-122 was not initiated and the aircraft was released to return home.

Corrective Action: This incident has already been addressed. Incident was discussed with the company and corrective action action taken. No further action required. RASO, R-5

SafeCom #: **01-163** Date: **05/27/2001** Time: **0900**

Location: **Roosevelt** State: **Arizona** Region: **3**

Mission Type: **Other** Procurement: **Contract**

Aircraft Type: **Bell 407**

Narrative: This is a good heads up for all managers new and old. Being caught up in crew training and other activities one might lose track of duty limitations on pilot/or fuel truck driver during slow times. In short, pilots days offs were coming up and the relief was in place as scheduled. during the 13th day during the late afternoon i realized the fuel truck driver had not been replaced . We had been in classroom training all day and did not notice fuel truck driver situation until late afternoon. I walked over and asked why he was still here and where the relief was! The response was that he was not able to find a relief and that he was o.k. to work because he was under DOT reg's. I referenced the contract and confirmed that being under FS contract he needed to comply with the 2 days off within 14 day policy.I notified the company about the situation. The helicopter was put out of service until the arrival of a relief . FAO was notified and concerred with the unavailability. Helicopter was put back in service at 1500 hrs. the following day.Company rep visited with fuel truck driver manager and pilot and the situation has been resovled. Be careful about keeping track of duty limitations even more so when things are slow. Don't count on the pilots or drivers to keep you informed on their duty status. It is both our responsibilities and we need to keep track through busy and slow times. We get so used to having reliefs just show up and do their duty that we take it for granted that it'll just automatically happened. Get confirmation way ahead of time, that way if you get busy doing other things it don't catch you off guard!

Corrective Action: Met with Pilot, company Rep, Fuel truck driver and discussed the duty limitation requirements as well as others items. Everyone accepted a portion of responsibility to make sure this does not happen again. If their is no relief available they need to let MGR. know ahead of time not on the day they are scheduled for relief.

SafeCom #: **01-168** Date: **05/28/2001** Time: **1700**

Location: **Devils Fire** State: **California** Region: **5**

Mission Type: **Fire, Retardant Drop (Airtanker)** Procurement: **Contract**

Aircraft Type: **Douglas DC4**

Narrative: Tanker XXX was enroute to the Devils Fire near Susanville, CA when they noticed the oil temp on engine #2 was excessively high. The crew quickly determined the engine was failing, shut it down, feathered the prop, and jettisoned the retardant load. T-XXX returned to Chester without further incident. Pilot and Co-pilot made a good decision re: retardant jettison away from the town of Westwood and highways. Good Job!! FAO.

Corrective Action: Maintenance inspector notified, engine replaced, documentation and test flight completed. Maintenance inspector notified regarding logbook entries, T-XXX was returned to contract availability with the recommendation of the NZ Maintenance inspector. (ATBM & FAO) No further action required. RASO, R-5

SafeCom #: **01-174** Date: **05/30/2001** Time: **1300**

Location: **Perry Helibase** State: **Florida** Region: **8**

Mission Type: **Fire, Retardant Drop (Helicopter)** Procurement: **Other**

Aircraft Type: **N/A**

Narrative: After a recon of the fires on Koon Pond and Mallory Swamp with the Florida State Governor, Incident Commander XXXXX XXXXXXX talked with the Perry Helibase manager and informed him that they should stop helicopter mopup operations due to it's ineffectiveness and the resultant increased risk of bucket operations.

Corrective Action: Acting Rasm: I recommend that the incident commander be recognized for this aviation risk management decision from the National Aviation safety manager.

SafeCom #: **01-176** Date: **05/28/2001** Time: **1230**

Location: **Perry Helibase** State: **Florida** Region: **8**

Mission Type: **Fire, Water Drop Bucket (Helicopter)** Procurement: **CWN**

Aircraft Type: **Bell 212**

Narrative: Helicopter had been performing safe and efficient bucket operations. However, the HEMG was informed that the flight mannual restricted flying the aircraft with one front door on and one removed. Helicopter had been operating with one door off to limit wind and smoke in the cabin.

Corrective Action: The other door was removed and operations continued. Acting RASM: Good actions taken. It is pilot responsibility to know and follow manual directions but as in this case a friendly reminder was all that was needed.

SafeCom #: **01-179** Date: **05/31/2001** Time: **1500**

Location: **Lake City Helibase** State: **Florida** Region: **8**

Mission Type: **Fire, Other** Procurement: **N/A**

Aircraft Type: **Bell 212**

Narrative: Helicopter operation from Lake City Helibase have been supported by TIMCO Corporation. Timco is providing helibase crash rescue and fire protection in addition to security at the helibase. Helicopter 215EH had a run away battery situation and timco loaned them a battery for 3 to 5 days so they would be available for IA. Timco is using their fabrication shop to build a sled to help in loading a 1000 gallon bambi bucket into an S-61. Timco has bent over backward to accomodate our operation and should be recognized for their assistance and effort to promote a safe helicopter operation.

Corrective Action: Acting RASM: I agree with the recommendation. I observed Timco also doing clean up and mowing/trimming of the helibase area that is not common to their operations. I will forward this to FICC as I believe this should be addressed by this group. Will track till closing. Talked with AOBD in Tallahassee, they are planning on special recognition during demob and will do the recognition from there.

United States Department of Agriculture
Forest Service

Aviation Safety Alert

No. 2001-08 August 21, 2000 **Page 1 of 1**

Subject: Helicopter Water Bucket Payloads

Area of Concern: Helicopter Operations

Distribution: All USFS Aviation Operations coordinated with DOI

Discussion:
In some instances, helicopters arrive for firefighting missions with buckets that cannot be adjusted to within allowable payload limits for local environmental conditions. As a result, payloads cannot be accurately determined by dipping partial buckets without the use of an onboard weighing system.

Recommendation:
Determine allowable payloads using the Interagency Load Calculation method, while using the appropriate HOGE helicopter performance charts and current local environmental conditions.

At the beginning of the fuel cycle, adjust the bucket capacity so as not to exceed the actual payload limit. If the bucket being utilized cannot be adjusted to the allowable payload, it is recommended that bucket operations not be conducted.

Future contract language will reflect this change.

Tony Kern
National Aviation Safety and Training Manager

United States Department of Agriculture
Forest Service

Aviation Safety Alert

No. 2001-09 May 1, 2001 Page 1 of 1

Subject: Uncontrolled airport procedures

Area of Concern: Aviation Operations

DISCUSSION: On June 25, 1996 the NTSB determined that one of the probable causes of a mid air collision between two aircraft at an uncontrolled airport was “inadequate procedures.” Recently, a Safecom (#01-80) identified a similar incident at an uncontrolled airport that could easily have resulted in multiple fatalities.

It is imperative that Forest Service pilots and pilots on contract to the Forest Service be thoroughly familiar with the content and comply with the intentions of FAA advisory circulars AC 90-42F (traffic advisory practices at airports without operating control towers) and AC-90-66A (recommended standard traffic patterns and practices for aeronautical operations at airports without operational control towers).

These circulars are attached to this Safety Alert and available online at www.faa.gov/avr/afs/acs/90-42f.txt and www.faa.gov/avr/afs/acs/90-66a.txt.

Please ensure this information is made available to all Forest Service and Forest Service contractor pilots as soon as possible.

Tony Kern
National Aviation Safety and Training Manager

Attachments:
AC 90-42F
AC 90-66A

ADVISORY CIRCULAR AC No: 90-42F

Date: 5/21/90

Change:

Initiated by: ATP-230

Subject: TRAFFIC ADVISORY PRACTICES AT AIRPORTS WITHOUT OPERATING CONTROL TOWERS

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1. PURPOSE. This advisory circular (AC) contains good operating practices and procedures for use when approaching or departing airports without an operating control tower and airports that have control towers operating part time. This AC has been updated to include changes in radio frequencies and phraseology.

2. CANCELLATION. Advisory Circular 90-42E, dated November 23, 1988, is cancelled.

3. REFERENCES. The following AC's also contain information applicable to operations at such uncontrolled airports.

   a. AC 90-66, Recommended Standard Traffic Patterns for Aircraft Operations at Airports Without Operating Control Towers.

   b. AC 150/5340-27A, Air-to-Ground Radio Control of Airport Lighting Systems.

4. DEFINITIONS.

   a. COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) - A designated frequency for the purpose of carrying out airport advisory practices while operating to or from an airport that does not have a control tower or an airport where the control tower is not operational. The CTAF is normally a UNICOM, MULTICOM, flight service station (FSS) frequency, or a tower frequency. CTAF will be identified in appropriate aeronautical publications.

   b. UNICOM - A nongovernment air/ground radio communication station which may provide airport information at public use airports.

   c. MULTICOM - A mobile service, not open to public correspondence use, used for essential communications in the conduct of activities performed by or directed from private aircraft.

   d. MOVEMENT AREA - The runways, taxiways, and other areas of an airport/heliport which are utilized for taxiing/hover taxiing, air taxiing, takeoff and landing of aircraft, exclusive of loading ramps, and parking areas.

5. DISCUSSION.

   a. In the interest of promoting safety, the Federal Aviation Administration, through its Airman's Information Manual, Airport Facility Directory, Advisory Circular, and other publications provides frequency information, good operating practices, and procedures for pilots to use when operating to and from an airport without an operating control tower.

   b. There is no substitute for awareness while in the vicinity of an airport. It is essential that pilots remain alert and look for other traffic and exchange traffic information when approaching or departing an airport without the services of an operating control tower. This is of particular importance since other aircraft may not have communication capability or, in some cases, pilots may not communicate their presence or intentions when operating into or out of such airports. To achieve the greatest degree of safety, it is essential that all radio-equipped aircraft transmit/receive on a common frequency identified for the purpose of airport advisories.

c. The key to communicating at an airport without an operating control tower is selection of the correct common frequency. The CTAF for each airport without an operating control tower is published in appropriate aeronautical information publications. The CTAF for a particular airport can also be obtained by contacting any FSS. Use of the appropriate CTAF, combined with visual alertness and application of the following recommended good operating practices, will enhance safety of flight into and out of all such airports.

d. There are two ways for pilots to communicate their intentions and obtain airport/traffic information when operating at an airport that does not have an operating tower: by communicating with an FSS that is providing airport advisories on a CTAF or by making a self-announced broadcast on the CTAF.

6. RECOMMENDED TRAFFIC ADVISORY PRACTICES.

All inbound traffic should continuously monitor and communicate, as appropriate, on the designated CTAF from a point 10 miles from the airport until clear of the movement area. Departing aircraft should continuously monitor/communicate on the appropriate frequency from startup, during taxi, and until 10 miles from the airport unless the Federal Aviation Regulations or local procedures require otherwise.

7. AIRPORT ADVISORY SERVICE (AAS) PROVIDED BY AN FSS.

a. An FSS physically located on an airport may provide airport advisory service (AAS) at an airport that does not have a control tower or where a tower is operated on a part-time basis and the tower is not in operation. The CTAF's for FSS's which provide this service are published in appropriate aeronautical publications.

b. An FSS AAS provides pilots with wind direction and velocity, favored or designated runway, altimeter setting, known traffic, Notices to Airmen, airport taxi routes, airport traffic pattern, and instrument approach procedures information. Pilots may receive some or all of these elements depending on the current traffic situation. Some airport managers have specified that under certain wind or other conditions, designated runways are used. Therefore, pilots should advise the FSS of the runway they intend to use. It is important to note that not all aircraft in the vicinity of an airport may be in communication with the FSS.

c. In communicating with an FSS on CTAF, establish two-way communications before transmitting outbound/inbound intentions or information. Inbound aircraft should initiate contact approximately 10 miles from the airport. Inbounds should report altitude, aircraft type, and location relative to the airport; should indicate whether landing or overflight; and should request airport advisory. Departing aircraft should, as soon as practicable after departure, contact the FSS and state the aircraft type, full identification number, type of flight planned; i.e., visual flight rules (VFR) or instrument flight rules (IFR), the planned destination or direction of flight, and the requested services desired. Pilots should report before taxiing, before entering the movement area, and before taxiing onto the runway for departure. If communication with a UNICOM is necessary, pilots should do so before entering the movement area or on a separate transceiver. It is essential that aircraft continuously monitor the CTAF within the specified area.

d. Examples of AAS phraseology:

(1) Inbound:

VERO BEACH RADIO, CENTURION SIX NINER DELTA DELTA ONE ZERO MILES SOUTH, TWO THOUSAND, LANDING VERO BEACH. REQUEST AIRPORT ADVISORY.

(2) Outbound:

VERO BEACH RADIO, CENTURION SIX NINER DELTA DELTA, READY TO TAXI, VFR, DEPARTING TO THE SOUTHWEST. REQUEST AIRPORT ADVISORY.

8. INFORMATION PROVIDED BY AERONAUTICAL ADVISORY STATIONS (UNICOM). UNICOM stations may provide pilots, upon request, with weather information, wind direction, the recommended runway, or other necessary information. If the UNICOM frequency is designated as the CTAF, it will be identified in appropriate aeronautical publications. If wind and weather information are not available, it may be obtainable from nearby airports via Automatic Terminal Information Service or Automated Weather Observing System frequency.

9. SELF-ANNOUNCE POSITION AND/OR INTENTIONS.

a. General. "Self-announce" is a procedure whereby pilots broadcast their position, intended flight activity or ground operation on the designated CTAF. This procedure is used primarily at airports which do not have a control tower or an FSS on the airport. The self-announce procedure should also be used when a pilot is unable to communicate with the local FSS on the designated CTAF.

b. If an airport has a control tower which is either temporarily closed or operated on a part-time basis and there is no operating FSS on the airport, pilots should use the published CTAF to self-announce position and/or intentions.

c. Where there is no tower, FSS, or UNICOM station on the airport, use MULTICOM frequency 122.9 for self-announce procedures. Such airports will be identified in appropriate aeronautical information publications.

d. Practice Approaches. Pilots conducting practice instrument approaches should be particularly alert for other aircraft that may be departing in the opposite direction. When conducting any practice approach, regardless of its direction relative to other airport operations, pilots should make announcements on the CTAF as follows:

(1) when departing the final approach fix, inbound;

(2) when established on the final approach segment or immediately upon being released by ATC;

(3) upon completion or termination of the approach; and

(4) upon executing the missed approach procedure.

NOTE: Departing aircraft should always be alert for arrival aircraft that are opposite direction.

10. UNICOM COMMUNICATION PROCEDURES.

a. In communicating with a UNICOM station, the following practices will help reduce frequency congestion, facilitate a better understanding of pilot intentions, help identify the location of aircraft in the traffic pattern, and enhance safety of flight:

(1) Select the correct CTAF frequency.

(2) State the identification of the UNICOM station you are calling in each transmission.

(3) Speak slowly and distinctly.

(4) Notify the UNICOM station approximately 10 miles from the airport, reporting altitude, aircraft type, aircraft identification, location relative to the airport, and whether landing or overflight. Request wind information and runway in use.

(5) Report on downwind, base, and final approach.

(6) Report leaving the runway.

b. Examples of UNICOM Phraseologies:

(1) Inbound:

FREDERICK UNICOM CESSNA EIGHT ZERO ONE TANGO FOXTROT 10 MILES SOUTHEAST DESCENDING THROUGH (ALTITUDE) LANDING FREDERICK, REQUEST WIND AND RUNWAY INFORMATION FREDERICK.

FREDERICK TRAFFIC CESSNA EIGHT ZERO ONE TANGO FOXTROT ENTERING DOWNWIND/BASE/FINAL (AS APPROPRIATE) FOR RUNWAY ONE NINE (FULL STOP/TOUCH-AND-GO) FREDERICK.

*FEDERICK TRAFFIC CESSNA EIGHT ZERO ONE TANGO FOXTROT CLEAR OF RUNWAY ONE NINE FREDERICK. *

(2) Outbound:

FREDERICK UNICOM CESSNA EIGHT ZERO ONE TANGO FOXTROT (LOCATION ON AIRPORT) TAXIING TO RUNWAY ONE NINE, REQUEST WIND AND TRAFFIC INFORMATION FREDERICK.

FREDERICK TRAFFIC CESSNA EIGHT ZERO ONE TANGO FOXTROT DEPARTING RUNWAY ONE NINE. "REMAINING IN THE PATTERN" or "DEPARTING THE PATTERN TO THE (DIRECTION) (AS APPROPRIATE)" FREDERICK.

11. EXAMPLES OF SELF-ANNOUNCE PHRASEOLOGIES.
It should be noted that aircraft operating to or from another nearby airport may be making self-announce broadcasts on the same UNICOM or MULTICOM frequency. To help identify one airport from another, the airport name should be spoken at the beginning and end of each self-announce transmission.

(1) Inbound:

STRAWN TRAFFIC, APACHE TWO TWO FIVE ZULU, (POSITION), (ALTITUDE), (DESCENDING) OR ENTERING DOWNWIND/BASE/FINAL (AS APPROPRIATE) RUNWAY ONE SEVEN FULL STOP, TOUCH-AND-GO, STRAWN.

*STRAWN TRAFFIC APACHE TWO TWO FIVE ZULU CLEAR OF RUNWAY ONE SEVEN STRAWN. *

(2) Outbound:

STRAWN TRAFFIC, QUEENAIRE SEVEN ONE FIVE FIVE BRAVO (LOCATION ON AIRPORT) TAXIING TO RUNWAY TWO SIX STRAWN.

STRAWN TRAFFIC, QUEENAIRE SEVEN ONE FIVE FIVE BRAVO DEPARTING RUNWAY TWO SIX. DEPARTING THE PATTERN TO THE (DIRECTION), CLIMBING TO (ALTITUDE) STRAWN.

(3) Practice Instrument Approach:

STRAWN TRAFFIC, CESSNA TWO ONE FOUR THREE QUEBEC (NAME - FINAL APPROACH FIX) INBOUND DESCENDING THROUGH (ALTITUDE) PRACTICE (TYPE) APPROACH RUNWAY THREE FIVE STRAWN.

STRAWN TRAFFIC, CESSNA TWO ONE FOUR THREE QUEBEC PRACTICE (TYPE) APPROACH COMPLETED OR TERMINATED RUNWAY THREE FIVE STRAWN.

12. SUMMARY OF RECOMMENDED COMMUNICATIONS PROCEDURES.

COMMUNICATION/BROADCAST PROCEDURES

FACILITY AT PRACTICE AIRPORT	FREQUENCY USE	OUTBOUND	INBOUND	INSTR APCH
a. UNICOM (no Tower or FSS)	Communicate with UNICOM station on published CTAF frequency (122.7, 122.8, 122.725, 122.975, or 123.0). If unable to contact UNICOM station, use self-announce procedures on CTAF.			
b. No Tower, Departing FSS, or UNICOM	Self-announce on MULTICOM freq. 122.9	Before taxiing and before taxiing on the runway for departure	10 miles out, and entering downwind, base, and final, and leaving the runway.	final approach fix (name) inbound, and approach
c. No Tower Operation, FSS Open	Communicate with FSS on CTAF			
d. FSS Closed completed/ terminated	Self-announced (No Tower) on CTAF			
e. Tower or, FSS not in Operation	Self-announced on CTAF			

13. IFR AIRCRAFT.
When operating in accordance with an IFR clearance, if air traffic control (ATC) approves a change to the advisory frequency, change to and monitor the CTAF as soon as possible and follow the recommended traffic advisory procedures.

14. GROUND VEHICLE OPERATION.
Drivers of airport ground vehicles equipped with radios should monitor the CTAF frequency when operating on the airport movement area and remain clear of runways/taxiways being used by aircraft. Radio transmissions from ground vehicles should be confined to safety-related matters.

15. RADIO CONTROL OF AIRPORT LIGHTING SYSTEMS.
Whenever possible, the CTAF will be used to control airport lighting systems at airports without operating control towers. This eliminates the need for pilots to change frequencies to turn the lights on and allows a continuous listening watch on a single frequency. The CTAF is published on the instrument approach chart and in other appropriate aeronautical information publications. For further details concerning radio controlled lights, see AC 150/5340-27.

16. DESIGNATED UNICOM/MULTICOM FREQUENCIES. The following listing depicts appropriate UNICOM and MULTICOM frequency used as designated by the Federal Communications Commission (FCC).

	Frequency	Use
	122.700	Airports without an operating control tower
	122.725	Airports without an operating control tower
*	122.750	Air-to-air communications & private airports (not open to the public) *
	122.800	Airports without an operating control tower
*	122.900	(MULTICOM FREQUENCY) Activities of a temporary, seasonal, or emergency nature.
	122.925	(MULTICOM FREQUENCY) Forestry management and fire suppression, fish and game management and protection, and environmental monitoring and protection. *
	122.950	Airports with control tower or FSS on airport
	122.975	Airports without an operating control tower
	123.000	Airports without an operating control tower
	123.050	Airports without an operating control tower
	123.075	Airports without an operating control tower

NOTE 1:
In some areas of the country, frequency interference may be encountered from nearby airports using the same UNICOM frequency. Where there is a problem, UNICOM operators are encouraged to develop a "least interference" frequency assignment plan for airports concerned using the frequencies designated for airports without operating control towers.
UNICOM licensees are encouraged to apply for UNICOM 25 kHz spaced channel frequencies. Due to the extremely limited number of frequencies with 50 kHz channel spacing, 25 kHz channel spacing should be implemented. UNICOM licensees may then request FCC to assign frequencies in accordance with the plan, which FCC will review and consider for approval.

NOTE 2:
Wind direction and runway information may not be available on UNICOM frequency 122.950.

17. USE OF UNICOM FOR ATC PURPOSES. UNICOM SERVICE MAY BE USED FOR ATC PURPOSES, only under the following circumstances:

a. Revision to proposed departure time.

b. Takeoff, arrival, or flight plan cancellation time.

c. ATC clearance, provided arrangements are made between the ATC facility and the UNICOM licensee to handle such messages.

18. MISCELLANEOUS. Operations at airports without operating control towers require the highest degree of vigilance on the part of pilots to see and avoid aircraft while operating to or from such airports. Pilots should stay alert at all times, anticipate the unexpected, use the published CTAF frequency, and follow recommended airport advisory practices.

/s/ Harold W. Becker
Acting Director, Air Traffic
Rules and Procedures Service

AC 90-66A -

RECOMMENDED STANDARD TRAFFIC PATTERNS AND PRACTICES FOR AERONAUTICAL OPERATIONS AT AIRPORTS WITHOUT OPERATING CONTROL TOWERS

Department of Transportation
Federal Aviation Administration

8/26/93

Initiated by: ATP-230

1. PURPOSE.
This advisory circular (AC) calls attention to regulatory requirements and recommended procedures for aeronautical operations at airports without operating control towers. It recommends traffic patterns and operational procedures for aircraft, lighter than air, glider, parachute, rotorcraft, and ultralight vehicle operations where such use is not in conflict with existing procedures in effect at those airports.

2. CANCELLATION.
AC 90-66, Recommended Standard Traffic Patterns for Airplane Operations at Uncontrolled Airports, dated February 27, 1975, is canceled.

3. PRINCIPAL CHANGES.
This AC has been updated to reflect current procedures at airports without operating control towers. Principal changes include: adding on "Other Traffic Pattern" section, amending appendix charts to remain consistent with the Airman's Information Manual (AIM), expanding the "Related Reading Material" section from "airplane" to "aeronautical" operations, adding definition and references to Common Traffic Advisory Frequency (CTAF), acknowledging straight-in approaches are not prohibited but may be operationally advantageous, and adding a paragraph on wake turbulence.

4. DEFINITIONS.
a. Airports Without Operating Control Towers. Airports without control towers or an airport with a control tower which is not operating. These airports are commonly referred to as nontowered, uncontrolled, or part time towered airports.
b. Common Traffic Advisory Frequency (CTAF). A frequency designed for the purpose of carrying out airport advisory practices while operating to or from an airport without an operating control tower. The CTAF may be a UNICOM, MULTICOM, flight service station, or tower frequency and is identified in appropriate aeronautical publications.

5. RELATED READING MATERIAL.
a. Airport/Facility Directory (AFD).
b. Airman's Information Manual (AIM).
c. Fly Neighborly Guide, Helicopter Association International.
d. Aviation USA, Aircraft Owners and Pilots Association (AOPA).
e. State aviation publications.
f. Various pilot guides.
g. Pilot Operations at Nontowered Airports, AOPA Air Safety Foundation pamphlet.
h. Guidelines for the Operation of Ultralight Vehicles at Existing Airports, United States Ultralight Association.
i. Facts for Pilots, United States Parachute Association.

j. The latest addition of the following ACs also contain information applicable to operations at airports without operating control towers:
   (1) AC 90-23, Aircraft Wake Turbulence.
   (2) AC 90-42, Traffic Advisory Practices at Airports Without Operating Control Towers.
   (3) AC 90-48, Pilot's Role in Collision Avoidance.
   (4) AC 91-32, Safety In and Around Helicopters.
   (5) AC 103-6, Ultralight Vehicle Operations - Airports, Air Traffic Control, and Weather.
   (6) AC 105-2, Sport Parachute Jumping.

6. BACKGROUND AND SCOPE.
   a. Regulatory provisions relating to traffic patterns are found in Parts 91, 93, and 97 of the Federal Aviation Regulations (FAR). The airport traffic patterns contained in Part 93 relate primarily to those airports where there is a need for unique traffic pattern procedures not provided for in Part 91. Part 97 addresses instrument approach procedures. At airports without operating control towers, Part 91 requires only that pilots of airplanes approaching to land make all turns to the left unless light signals or visual markings indicate that turns should be made to the right.
   b. The Federal Aviation Administration (FAA) believes that observance of a standard traffic pattern and the use of CTAF procedures as detailed in AC 90-42 will improve the safety and efficiency of aeronautical operations at airports without operating control towers.

7. GENERAL OPERATING PRACTICES.
   a. Use of standard traffic patterns for all aircraft and CTAF procedures by radio equipped aircraft are recommended at all airports without operating control towers. However, it is recognized that other traffic patterns may already be in common use at some airports or that special circumstances or conditions exist that may prevent use of the standard traffic pattern.
   b. The use of any traffic pattern procedure does not alter the responsibility of each pilot to see and avoid other aircraft. Pilots are encouraged to participate in "Operation Lights On," which is a voluntary pilot safety program described in the AIM designed to enhance the "see and avoid" requirement.
   c. As part of the preflight familiarization with all available information concerning a flight, each pilot should review all appropriate publications (AFD, AIM, Notices to Airmen (NOTAM), etc.), for pertinent information on current traffic patterns at the departure and arrival airports.
   d. It is recommended that pilots utilize visual indicators, such as the segmented circle, wind direction indicator, landing direction indicator, and traffic pattern indicators which provide traffic pattern information.
   e. The FAA encourages pilots to use the standard traffic pattern. However, for those pilots who choose to execute a straight-in approach, maneuvering for and execution of the approach should be completed so as not to disrupt the flow of arriving and departing traffic. Therefore, pilots operating in the traffic pattern should be alert at all times to aircraft executing straight-in approaches.
   f. Pilots who wish to conduct instrument approaches should be particularly alert for other aircraft in the pattern so as to avoid interrupting the flow of traffic. Position reports on the CTAF should include distance and direction from the airport, as well as the pilot's intentions upon completion of the approach.
   g. Pilots of inbound nonradio equipped aircraft should determine the runway in use prior to entering the traffic pattern by observing the landing direction indicator or by other means. Pilots should be aware that procedures at airports without operating control towers generally do not require the use of two-way radios; therefore, pilots should be especially vigilant for other aircraft while operating in the traffic pattern.

h. Wake turbulence is generated by all aircraft. Therefore, pilots should expect to encounter turbulence while operating in a traffic pattern and in proximity to other aircraft. Aircraft components and equipment can be damaged by wake turbulence. In flight, avoid the area below and behind the aircraft generating turbulence especially at low altitude where even a momentary wake encounter can be hazardous. All operators should be aware of the potential adverse effects that their wake, rotor or propeller turbulence has on light aircraft and ultralight vehicles,

8. RECOMMENDED STANDARD TRAFFIC PATTERN.

Airport owners and operators, in coordination with the FAA, are responsible for establishing traffic patterns. However, the FAA encourages airport owners and operators to establish traffic patterns as recommended in this AC. Further, left traffic patterns should be established except where obstacles, terrain, and noise sensitive areas dictate otherwise. Appendix 1 contains diagrams for recommended standard traffic patterns.

a. Prior to entering the traffic pattern at an airport without an operating control tower, aircraft should avoid the flow of traffic until established on the entry leg. For example, wind and landing direction indicators can be checked while at an altitude above the traffic pattern. When the proper traffic pattern direction has been determined, the pilot should then proceed to a point well clear of the pattern before descending to the pattern altitude.

b. Arriving aircraft should be at the appropriate traffic pattern altitude before entering the traffic pattern. Entry to the downwind leg should be at a 45 degree angle abeam the midpoint of the runway.

c. It is recommended that airplanes observe a 1000 foot above ground level (AGL) traffic pattern altitude. Large and turbine powered airplanes should enter the traffic pattern at an altitude of 1,500 feet AGL or 500 feet above the established pattern altitude. A pilot may vary the size of the traffic pattern depending on the aircraft's performance characteristics.

d. The traffic pattern altitude should be maintained until the aircraft is at least abeam the approach end of the landing runway on the downwind leg.

e. The base leg turn should commence when the aircraft is at a point approximately 45 degrees relative bearing from the runway threshold.

f. Landing and takeoff should be accomplished on the operating runway most nearly aligned into the wind. However, if a secondary runway is used, pilots using the secondary runway should avoid the flow of traffic to the runway most nearly aligned into the wind.

g. Airplanes on takeoff should continue straight ahead until beyond the departure end of the runway. Aircraft executing a go-around maneuver should continue straight ahead, beyond the departure end of the runway, with the pilot maintaining awareness of other traffic so as not to conflict with those established in the pattern. In cases where a go-around was caused by an aircraft on the runway, maneuvering parallel to the runway may be required to maintain visual contact with the conflicting aircraft.

h. Airplanes remaining in the traffic pattern should not commence a turn to the crosswind leg until beyond the departure end of the runway and within 300 feet below traffic pattern altitude, with the pilot ensuring that the turn to downwind leg will be made at the traffic pattern altitude.

i. When departing the traffic pattern, airplanes should continue straight out or exit with a 45 left turn (right turn for right traffic pattern) beyond the departure end of the runway after reaching pattern altitude. Pilots need to be aware of any traffic entering the traffic pattern prior to commencing a turn.

j. Airplanes should not be operated in the traffic pattern at an indicated airspeed of more than 200 knots (230 mph).

k. Throughout the traffic pattern, right of way rules apply as stated in FAR Part 91.113. Any aircraft in distress has the right of way over all other aircraft. In addition, when converging aircraft are of different categories, a balloon has the right of way over any other category of aircraft; a glider has the right of way over an airship, airplane, or rotorcraft; and an airship has the right of way over an airplane or rotorcraft.

9. OTHER TRAFFIC PATTERNS.

Airport operators routinely establish local procedures for the operation of gliders, parachutists, lighter than air aircraft, helicopters, and ultralight vehicles. Appendices 2 and 3 illustrate these operations as they relate to recommended standard traffic patterns.

a. Rotorcraft.

(1) In the case of a helicopter approaching to land, the pilot must avoid the flow of fixed wing aircraft and land on a marked helipad or suitable clear area. Pilots should be aware that at some airports, the only suitable landing area is the runway.

(2) All pilots should be aware that rotorcraft may fly slower and approach at steeper angles than airplanes. Air taxi is the preferred method for helicopter ground movements which enables the pilot to proceed at an optimum airspeed, minimize downwash effect, and conserve fuel. However, flight over aircraft, vehicles, and personnel should be avoided.

(3) In the case of a gyrocopter approaching to land, the pilot should avoid the flow of fixed wing aircraft until turning final for the active runway.

(4) A helicopter operating in the traffic pattern may fly a pattern similar to the airplane pattern at a lower altitude (500 AGL) and closer to the airport. This pattern may be on the opposite side of the runway with turns in the opposite direction if local policy permits.

(5) Both classes of rotorcraft can be expected to practice power off landing (autorotation) which will involve a very steep angle of approach and high rate of descent (1,500 - 2,000 feet/minute).

b. Gliders.

(1) A glider, including the tow aircraft during towing operations, has the right of way over powered aircraft.

(2) If the same runway is used by both airplanes and gliders, the glider traffic pattern will be inside the pattern of engine driven aircraft. If a "Glider Operating Area" is established to one side of a powered aircraft runway, the glider pattern will normally be on the side of the airport closest to the "Glider Operating Area." This will allow gliders to fly the same direction traffic pattern as powered aircraft in one wind condition and necessitate a separate opposing direction traffic pattern in the opposite wind condition. (See examples in Appendix 2, Glider Operations).

(3) Typically, glider traffic patterns have entry points (initial points) from 600 to 1,000 feet AGL.

c. Ultralight Vehicles.

(1) In accordance with FAR Part 103, ultralight vehicles are required to yield the right of way to all aircraft.

(2) Ultralight vehicles should fly the rectangular pattern as described in Appendix 2. Pattern altitude should be 500 feet below and inside the standard pattern altitude established for the airport. An ultralight pattern with its own dedicated landing area will typically have a lower traffic pattern parallel to the standard pattern with turns in the opposite direction.

(3) All pilots should be aware that ultralights will fly significantly slower than airplanes. In addition, ultralights may also exhibit very steep takeoff and approach angles. Turns may be executed near the end of the runway in order to clear the area expediently.

d. Lighter Than Air Aircraft.

(1) A balloon has the right of way over any other category of aircraft and does not follow a standard traffic pattern.

(2) Due to limited maneuverability, airships do not normally fly a standard traffic pattern. However, if a standard traffic pattern is flown, it will be at an airspeed below most other aircraft.

e. Parachute Operations.

(1) All activities are normally conducted under a NOTAM noting the location, altitudes, and time or duration of jump operations. The Airport/Facility Directory lists airports where permanent drop zones are located.

(2) Jumpers normally exit the aircraft either above, or well upwind of, the airport and at altitudes well above traffic pattern altitude. Parachutes are normally deployed between 2,000 feet and 5,000 feet AGL and can be expected to be below 3,000 feet AGL within 2 miles of the airport.

(3) Pilots of jump aircraft are required by Part 105 to establish two-way radio communications with the air traffic control facility or Flight Service Station which has jurisdiction over the affected airspace prior to jump operations for the purpose of receiving information in the aircraft about known air traffic in the vicinity. In addition, when jump aircraft are operating at or in the vicinity of an airport, pilots are also encouraged to provide advisory information on the CTAF, i.e., "Chambersburg traffic, jumpers away over Chambersburg."

(4) When a drop zone has been established on an airport, parachutists are expected to land within the drop zone. At airports that have not established drop zones, parachutists should avoid landing on runways, taxiways, aprons, and their associated safety areas. Pilots and parachutists should both be aware of the limited flight performance of parachutes and take steps to avoid any potential conflicts between aircraft and parachute operations.

(5) Appendix 3 diagrams operations conducted by parachutists.

/s/
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